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MUSCLE SHOALS PROPOSITIONS

HEARINGS

BEFORE THE

COMMITTEE ON MILITARY AFFAIRS

HOUSE OF REPRESENTATIVES

SIXTY-SEVENTH CONGRESS
SECOND SESSION

THURSDAY, FEBRUARY 9, 1922
TO
MONDAY, MARCH 13, 1922

IN ONE VOLUME

WASHINGTON
GOVERNMENT PRINTING OFFICE
92900 1922

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SIXTY-SEVENTH CONGRESS.

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MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Wednesday, February 8, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. This meeting has been called for the purpose of taking up the proposal of Henry Ford which the Secretary of War has submitted to Congress. Mr. Ford's proposal is in writing. He has sent a copy to every Member, I understand, and his secretary has also sent me a telegram stating that he was sending 25 additional copies, so that each member of the committee assuredly will have a copy before him.

If there is no objection, we will print as a part of this hearing the report of the Secretary of War submitted to Congress in House Document No. 167, Sixth-seventh Congress, second session, as follows:

[House Document No. 167. Sixty-seventh Congress, second session.]

WAR DEPARTMENT,
Washington, February 1, 1922.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: Soon after I assumed the duties of Secretary of War, suggestions were made to me by those interested in the development of the power plant and navigation at Muscle Shoals that I should recommend to Congress that an appropriation be made to complete Dam No. 2 (Wilson Dam). In response to such suggestions I stated that when a proposal was made which would assure the Government a reasonable return on at least the additional money required to complete the project, and an effective use of the development for commercial purposes, I would send it to Congress, as the power to dispose of these plants is vested in that branch of the Government.

On July 8, 1921, in consequence of this statement and of some negotiations with the Chief of Engineers, United States Army, Mr. Henry Ford presented a proposal in writing, in which he offered a fixed annual rental of $1,200,000 for Dam No. 2 and its power plant and appurtenances, such rental to commence six years after the installation of equipment capable of producing 100,000 horsepower, and a rental of $200,000 to be paid annually during the first six years of the lease. On proposed Dam No. 3 he offered a fixed annual rental of $480,000 commencing three years after 80,000 horsepower should be developed, and $160,000 per annum for the first three years of the lease period. Provision was made for certain upkeep charges and payments to be made toward a sinking fund estimated as sufficient to amortize approximately $48,000,000 of the cost of the dams. Under this proposal the United States was to undertake the completion of Dam No. 2 and the construction of Dam No. 3. This offer was conditioned upon the United States selling to Mr. Ford nitrate plants No. 1 and No. 2, the Waco quarry and its equipment, and the Gorgas-Warrior steam plant and transmission line and appurtenances, all for the price of $5,000,000.

The cost of completing the two dams is estimated by the Chief of Engineers to be at this time, in round figures, $50,000,000. Consequently I did not believe that the proposed rental was an adequate return on the Government's proposed investment, and suggested that Mr. Ford modify his offer so that it would be based upon an annual payment equivalent to a rate of interest on the total cost to the Government of completing the projects. On January 13, 1922, Mr. Ford presented to me a proposed modification of his previous offer, by which he agreed to undertake the construction and completion, at actual cost and without profit, of the work referred to in his offer of July 8, 1921, and when completed and ready for operation he offered to pay the United States as annual rental of the property an amount equal to 4 per cent of the total cost of such construction.

At my suggestion Mr. Ford placed in one instrument his offer as modified, which was signed by him on January 25, 1922, and delivered to me on January 27, and which I have the honor to transmit herewith for such action as Congress may deem appropriate.

In brief, Mr. Ford offers to undertake the completion of Dam No. 2 and the construction of Dam No. 3 according to the Government's plans, for which he shall be

reimbursed the actual cost, and to lease the dams and power plants at an annual rental equivalent to 4 per cent of the cost to the Government of completing Dam No. 2 and constructing Dam No. 3 (exclusive of the cost of acquiring lands and flowage rights necessary for Dam No. 3). The rentals at 4 per cent are to commence, respectively, in six years after Dam No. 2 has been completed to the point where equipment for 100,000 horsepower is installed and ready for service, and three years after the equipment to develop 80,000 horsepower is installed and ready for service at Dam No. 3. In the meantime, during the six-year and three-year periods, respectively, he offers to pay upon Dam No. 2 an annual rental of $200,000 and on Dam No. 3 $160,000. His offer places upon the United States the responsibility for repair and maintenance of the two dams other than the power houses, which power houses and electrical equipment he agrees to maintain at his own expense in efficient operating condition.

As compensation to the United States for the repair and upkeep of Dam No. 2 and locks, he offers to pay the sum of $35,000 annually, and of Dam No. 3 and lock, the sum of $20,000 annually He also agrees to furnish electricity for operating the locks at each of these dams without charge to the Government, and in addition he agrees to pay the sum of $23,373 semiannually for the purpose of building up a sinking fund to return to the United States at the end of the lease period a sum of money which he estimates, if invested at 4 per cent, will be approximately $49,000,000. As a condition of this offer he asks that the United States sell to him nitrate plants Nos. 1 and 2, the Waco quarry, and the Gorgas-Warrior steam plant, with all appurtenances, for the sum of $5,000,000, payable $1,000,000 down and the balance in annual installments of $1,000,000 each, with 5 per cent interest on deferred payments. As a further consideration to the Government he agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds throughout the lease period, and to maintain it in its present state of readiness, or its equivalent, for immediate operation in the manufacture of materials necessary in time of war for the production of explosives. He further agrees that the fertilizer produced at nitrate plant No. 2 shall not be sold at a profit in excess of 8 per cent of the actual annual cost of production thereof, and to turn over to the United States nitrate plant No. 2 whenever it shall be required for the national defense. He likewise asks for a preference in opportunity to purchase or lease the property at the end of the lease period and for the right, for a period not stated, to be supplied with electric power at reasonable rates in an amount equal to his average consumption during the previous 10 years in case the plant is operated and his company does not purchase or lease it. He also states that his proposal must be accepted as a whole and not in part.

In order that you may the more readily understand just what Mr. Ford is proposing to buy and to lease, I shall state briefly what has occurred in connection with Government developments at Muscle Shoals, and the character of the Government-owned property there.

Without going into the preliminary history in connection with the proposals for the development and improvement of the Tennessee River, which might, if necessary, be traced to the year 1827, it is deemed sufficient for present purposes to invite attention to the letter over the signature of the Secretary of War, dated June 28, 1916, and printed as House Document No. 1262, Sixty-fourth Congress, first session, transmitting, with a letter from the Chief of Engineers, reports on preliminary examination and survey of Tennessee River between Browns Island and the railroad bridge below the city of Florence, wherein is contained a full discussion of Dam No. 2, now known as the Wilson Dam, and the proposed Dam No. 3, referred to by Mr. Ford, but as to which no construction work has yet been undertaken. The commencement of construction work on the Dam No. 2 resulted from the authority contained in section 124 of the national defense act of June 3, 1916 (39 Stat., 166, 215), under which the President, in a letter dated February 23, 1918, authorized the construction of said dam, as a result of which allotments have been made at various times amounting to $17,159,610.42 for its construction. The total expenditures on Dam No. 2 have been $16,251,038.14; the greater part of the balance unexpended will be required to meet payments on contracts for power machinery for the dam. A large construction camp has been built, a railroad track laid to the site, complete construction plant assembled, and the dam itself approximately 30 per cent completed.

Dam No. 2, when completed, will have a total length of 4,267 feet, of which 2,890 feet is a spillway section, 1,221 feet will be the power-house section, and 156 feet abutments and approaches. The height of the dam above present low water is 95 feet, including crest gates 18 feet in height. The total height from the bottom of the excavation for the foundations to the roadway on top of the dam will be 132 feet. There have been no expenditures on Dam No. 3, which is located 14.7 miles upstream from Dam No. 2. Dam No. 2, when constructed, will render 14.7 miles of Muscle Shoals navigable, while Dam No. 3 will overflow the remaining portion of the rapids and will improve conditions of navigation for a distance of 63 additional miles. The present estimates of the Engineer Department for the completion of both Dam No. 2 and Dam No. 3 is $50,000,000. Engineers for Mr. Ford have presented a lower estimate, but Mr. Ford has not seen fit to guarantee the construction for this lower figure.

Situated about 6 miles southwest from Dam No. 2, at Sheffield, Culbert County, Ala., adjacent to the city and along the Tennessee River, is United States nitrate plant No. 1, constructed by the United States during the war under an agreement with the General Chemical Co., approved by the Secretary of War on June 14, 1917, for use of its process, and at a total cost of $12,887,941.31. The plant was built under the supervision of the Ordnance Department of the Army to produce 22,000 tons of ammonium nitrate per annum, using the direct synthetic ammonia (Haber process) of the General Chemical Co. The details of the process were not sufficiently perfected, however, and the plant proved unsuccessful in a test operation. The construction of the plant was started from an appropriation contained in the national defense act of June 3, 1916, and completed from appropriations made for the national security and defense, armament of fortifications and ordnance service. The total acreage of land embraced within the plant site is approximately 19,000 acres. The plant is now in an idle, stand-by condition, with part of the land leased for farm purposes. The cost of maintenance during the fiscal year 1921 was $75,506.42.

At Muscle Shoals, Culbert County, Ala., 4 miles northeast of nitrate plant No. 1, and 2 miles distant from Dam No. 2, is located United States nitrate plant No. 2. This plant was constructed under contract with the Air Nitrates Corporation for the production of munitions of war under contract dated and executed June 8, 1918, at a total expense, including Waco quarry, of $67,555,355.09. The plant was built for an estimated capacity of 110,000 tons of ammonium nitrate per annum, using the cyanamid process of the American Cyanamid Co. The plant was successful in a two-weeks test operation with one-fifth of the plant in use, during which time 1,700 tons of ammonium nitrate were produced, as well as 2,200 tons of cyanamid not converted. The cost of building said plant was paid for out of the appropriations for armament of fortifications and ordnance service. The plant site, not including Waco quarry, embraces 2,306 acres, acquired at a cost of $237,711. The plant is now in an idle stand-by condition, except the power plant located thereon, which was leased, together with a transmission line, to the Alabama Power Co., under the provisions of the act of July 28, 1892 (27 Stat., 321), by an instrument dated November 17, 1921, but revocable at any time. The cost of maintenance of said plant for the fiscal year 1921, including Waco quarry, was $201,674.63.

Situated about 20 miles south of plant No. 2 in Franklin County, and 5 miles southeast of Russellville, Ala., is located what is known as Waco quarry, acquired by the United States in connection with the operation of nitrate plant No. 2, embracing an area of 460 acres, acquired at a total cost of $52,962.88. This quarry has a crushing plant sufficient to produce 2,000 tons of crushed and sized limestone per day. The total cost of said quarry, including buildings and plant, was $1,179,076.80, included, however, as an element of the total cost of nitrate plant No. 2. The plant is now in an idle stand-by condition and a portion of the land is leased for farm purposes.

Situated about 88 miles southeast of nitrate plant No. 2, in Walker County, Ala., is located what is known as the Government-owned Warrior steam plant at Gorgas, Ala. This plant was constructed under contract with the Alabama Power Co., dated December 1, 1917, on land owned or acquired by the said company. It was built in the vicinity of a coal mine with a view to using coal direct from the mines. It has a capacity of 30,000 kilowatts, and the electric power produced at said plant is carried over a transmission line extending a distance of about 88 miles to nitrate plant No 2, to furnish power for the operation of said plant. The total cost of the plant was $4,979,782.33. It was built and paid for from appropriations for armament of fortifications. This property is now being operated as a part of the Alabama Power Co.'s system on a rental basis as provided for in the contract for the construction thereof, and during the calendar year 1921 netted the Government approximately $75,000.

Some question was raised in my mind as to the binding effect of certain provisions appearing in the contract for the construction of nitrate plant No. 2 by the Air Nitrates Corporation and in the contract for the construction of the Gorgas Warrior steam plant and transmission lines by the Alabama Power Co., which purported to give said companies options to purchase under certain conditions, but I have submitted these questions to the Acting Judge Advocate General who is of the opinion that at the time these contracts were made there was no authority to sell said properties, and hence no authority to give an option for the purchase of same. He holds that as the Constitution vests in Congress the sole power to dispose of and make all needful rules and

regulations regarding the property of the United States, and Congress not having authorized the Secretary of War to sell the same, the plenary power to dispose of such property still rests solely in Congress. The Acting Judge Advocate General has also held that the provision contained in section 124 of the national defense act directing that the plant therein authorized be operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital, is applicable to the plant as a whole and is a restraint upon its sale. This construction if justified, would prevent the lease or rental of the plant for private operation. The solution of the numerous legal questions involved naturally occasioned more or less delay in the consideration of the proposals.

In this connection, I may say that the Air Nitrates Corporation has notified me in writing that it claims the right to exercise the option, which it claims to have under the terms of its construction contract, to purchase nitrate plant No. 2 on as favorable terms as those offered by Mr. Ford for the property, should the United States determine to accept Mr. Ford's offer. The Alabama Power Co. may make a similar claim in regard to the Warrior plant and line.

To briefly summarize Mr. Ford's offer for the above properties, the considerations running to the Government are:

(*a*) Four (4) per cent on part of the capital necessary to complete the construction of the power projects (no interest is proposed to be paid upon that part of the Government's investment which goes to pay for lands and flowage rights for Dam No. 3, which item is estimated by the engineers to exceed $2,000,000 in probable cost).

(*b*) The payment of a sum semiannually into a sinking fund calculated to produce about $49,000,000 at the end of the lease periods. This payment amounts to $46,746 annually. In other words, Mr. Ford proposes to pay approximately $49,000,000 at the end of the lease period provided the Government has been able to invest his payments at 4 per cent per annum.

(*c*) Mr. Ford proposes to pay $35,000 a year for the upkeep of Dam No. 2 and its locks, and the sum of $20,000 a year for the upkeep of Dam No. 3 and its lock. These payments are expected to meet the ordinary upkeep expense with which the Government is charged. Mr. Ford assumes the responsibility for upkeep and repair of the power houses and equipment, so that ultimately such equipment is expected to be turned back to the Government in approximately as good condition as when received.

(*d*) The proposal requires Mr. Ford's company to operate nitrate plant No. 2 to its approximate present capacity, which is estimated to be a production of 110,000 tons of ammonium nitrate per annum, and to sell such product at a price not to return a net profit in excess "of 8 per cent of the actual annual cost of production."

(*e*) Mr. Ford's company is to maintain nitrate plant No. 2 in its present state of readiness for immediate operation for the production of explosives, and is to turn it over to the Government, together with such of its personnel as may be required for the national defense.

(*f*) The Government will be saved the expense of maintaining and operating the present imperfect facilities for navigation at Muscle Shoals, amounting to from $35,000 to $85,000 per annum.

There are a number of advantages to the Government in the present proposal that were not apparent in the first offer. Mr. Ford's original proposal of July 8, 1921, contained two paragraphs dealing with the matter of amortization of the cost of construction of the two dams. The first of these paragraphs was numbered 2, and reads as follows:

"At the beginning of the seventh year of the lease period, and annually thereafter, the company will pay to the United States a sum not greater than thirty-nine thousand five hundred thirty-seven dollars ($39,537) to retire, during the remaining period of ninety-four (94) years, the total cost of the Wilson Dam and its power house, substructures, superstructures, machinery and appliances, including locks, all taken at forty million dollars ($40,000,000); the sinking fund investments to bear the highest rate of interest obtainable, but not less than four per cent (4 per cent) per annum."

The other paragraph was numbered 7 and reads as follows:

"At the beginning of the fourth (4th) year of the lease period, and annually thereafter, the company will pay to the United States a sum not greater than seven thousand ten dollars ($7,010), to retire, during the remaining period of ninety-seven (97) years, the total cost of Dam No. 3 and its power house, substructures, superstructures, machinery and appliances, including lock, all taken at eight million dollars ($8,000,000); the sinking fund investments to bear the highest rate of interest obtainable, but not less than four per cent (4 per cent) per annum."

In the present proposal the subject of amortization is covered in one paragraph, numbered 10, which reads as follows:

"For the purpose of enabling the Government to create and provide a sinking fund to retire the cost of Dam No. 3 at the end of one hundred (100) years, the company will, at the beginning of the fourth (4th) year of the lease period, and semiannually thereafter for the remaining term of the lease, pay to the United States Government, the sum of three thousand five hundred and five dollars ($3,505); and for the purpose of enabling the Government to create and provide a sinking fund to retire the cost of Dam No. 2 at the end of one hundred (100) years, the company will at the beginning of the seventh (7th) year of the lease period, and semiannually thereafter for the remaining term of the lease, pay to the United States Government the sum of nineteen thousand eight hundred and sixty-eight dollars ($19,868)."

It will be observed that the provision for amortization in the last proposal is very much more favorable to the United States than it was in the offer of July 8, 1921. By the earlier proposal the maximum amount which the Government could realize from the payments made by Mr. Ford at the end of the lease periods would be not to exceed $48,000,000 ($40,000,000 in the case of Dam No. 2 and $8,000,000 in the case of Dam No. 3). The annual payments were in no case to exceed the amounts stipulated, which are the same in the present proposal as in the former proposal, but the former proposal contemplated a reduction in amount of annual payments to correspond to the excess over 4 per cent interest which might be earned by the sinking fund, whereas under the present proposal the fixed installments for amortization are to be paid regardless of the rate of interest earned by the fund. Therefore, if the United States should be able to invest the money at a higher rate of interest than four (4) per cent, the sinking fund at the end of the lease periods would amount to very much more than $48,000,000. This may be best shown by the following table:

Amount retired by Mr. Ford's sinking fund at various rates of interest, compounded semiannually.

Account of—	Semi-annual pay-ments.	Life of fund (years).	Amount retired at rate of—				
			4 per cent.	4½ per cent.	4¾ per cent.	5 per cent.	6 per cent.
Dam No. 2	$19,868	94	$40,919,798	$48,783,949	$58,319,359	$83,718,097	$176,030,810
Dam No. 3	3,505	97	8,152,137	9,786,054	11,780,690	17,150,545	37,103,880
Total			49,071,935	58,570,003	70,100,049	100,868,642	213,134,690

NOTE.—Payments are to be made into sinking fund semiannually at the beginning of each semiannual interest period. This sinking (or retirement) fund has nothing to do with Mr. Ford's interest payments, but represents a separate fund to be invested at the highest interest rate obtainable for the purpose of returning to the Government within the least period the largest amount possible, with the above semi-annual payments, consistent with safe investment.

Should the dams be constructed at a cost of not to exceed $42,000,000, as estimated by Mr. Ford's engineers, there would be left to apply on the investment of the Government heretofore made whatever the amortization payments would produce in excess of the $42,000,000. If the amortization fund should be invested continuously at 4 per cent there would be at least $7,000,000 to be thus applied, but should it be invested at a greater rate of interest the amount would be increased, as shown by the table.

The provision for renewal of the lease which was contained in the proposal of July 8, 1921, was numbered 11, and reads as follows:

"At any time prior to the expiration of said lease period of one hundred (100) years the company shall have the right to negotiate with the Government for a renewal of the leases for the two above dams, their power houses, etc. In the event of disagreement as to terms of the renewal, the United States and the company shall each appoint an arbitrator, and these arbitrators shall choose a third. The decision of the arbitration board of three shall be final and binding upon both parties."

The effect of this provision was to bind the United States to a renewal of the lease for 100 years on such terms as should be determined to be just by a board of arbitration. Under the new proposal the renewal clause is contained in paragraph 17, which reads as follows:

"In order that said company may be supplied with electric power and the farmers with fertilizers after the termination of the said 100-year lease, should the United States elect not to operate said power plants but determine to lease or dispose of same, the company shall have the preferred right to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon. If the said leases are not renewed or the property covered thereby is not sold to said

company, its successors or assigns, any operation or disposal thereof shall not deprive the company, its successors or assigns, of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years."

This paragraph does not bind the United States to a renewal of the lease and is in no way an attempt to control the policy of Congress beyond the 100-year period of the present lease, except to preserve to Mr. Ford's company "the preferred right to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon." It also attempts to preserve for the company a right to be supplied with electric power, for a period not stated, "at reasonable rates" in the event the power plants are operated or disposed of to some one other than the company.

In Mr. Ford's offer of July 8, 1921, no provision was made, except possibly by inference, as to who should bear the expense of renewals, repairs, and maintenance on the power houses, machinery, and appliances which will be erected and installed in connection with the dams. Paragraphs 4 and 8 of the present proposal impose the obligation upon Mr. Ford's company of making such renewals and repairs and effecting such maintenance at its own expense. These provisions impose upon Mr. Ford a considerable obligation.

Under the first proposal the United States was to undertake the building of the dams and power plants, but under the present offer Mr. Ford's company is to do the construction work in accordance with plans and specifications prepared or approved by the Chief of Engineers.

The proposal of July 8, 1921, contained no provision for a termination of the leases in case of default. Paragraph 18 of the present proposal applies substantially the same provisions to Mr. Ford's proposed leases as are contained in the present water power act.

Paragraph 19 of the present proposal, except the first sentence thereof, had no counterpart in the original proposal of July 8, 1921. The new matter reads as follows:

"Upon acceptance the promises, undertakings, and obligations, shall be binding upon the United States, and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors and assigns; and all the necessary contracts, leases, deeds, and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed and delivered by the respective parties above mentioned."

Apparently this is an attempt on Mr. Ford's part to express a personal obligation to assure the performance of the contracts which are to be made by the company which he is to organize. It might be contended that this language is susceptible of a construction to the effect that Mr. Ford is personally bound only to see that his company enters into the contracts required to carry out the terms of the proposal, and this point should be cleared up so that there can be no question as to its proper construction. There should be some assurance that the contracts made by the proposed company will be carried out or some penalty imposed for failure to perform.

In the event Mr. Ford's proposal is accepted, the Government must make new appropriations amounting to $40,000,000 to $50,000,000, of which Mr. Ford's company will have the benefit for approximately 100 years at 4 per cent. The company is, of course, bound to keep nitrate plant No. 2 in a condition to produce explosives, which, as a matter of preparedness, is of great value to the Government, as, no doubt, a plant fully organized and in production would be available far sooner than one maintained merely in stand-by. Nevertheless, Mr. Ford is offering but $5,000,000 for the title to the two nitrate plants, the Waco quarry, the Gorgas-Warrior steam plant, transmission lines, and appurtenances. That Congress may the better understand the value of the property for which Mr. Ford is offering this $5,000,000, I am attaching to this letter, as Exhibit A, a statement prepared by the Chief of Ordnance showing the cost and estimated salvage value of these properties. From the table contained in this statement it will be seen that these properties cost the United States approximately $85,000,000 and that as scrap they are estimated to be worth $8,812,000. However, the last column of the table in Exhibit A indicates that the Chief of Ordnance believes the War Department can dispose of the property for $16,272,000. Mr. Ford is bound by his proposal to operate nitrate plant No. 2, but there is no legal obstacle to prevent his disposing of the other properties to which he gets title.

Should he be able to obtain what the Chief of Ordnance estimates that the Government can secure for the various items, namely, $3,000,000 for the Warrior plants, which have an installation of 40,000 horsepower, and $600,000 for nitrate plant No. 1, and dispose of the Warrior-Muscle Shoals transmission line as a transmission line and not as scrap for $675,000, and should he obtain $357,000 for the Waco quarry he would have left the nitrate plant No. 2, with its 80,000-horsepower steam plant, at a cost to him of less than $400,000. The interest on the proceeds of such possible sales would amount to a very large sum during the terms of the proposed contract.

The present revenue from rental of the power plant at nitrate plant No. 2 is a minimum of $120,000 per annum with a possibility that in event of operation it may run to $260,000. The cost of maintenance of nitrate plant No. 2 was approximately $200,000 during the fiscal year 1921. The total horsepower developed by the three steam plants to which Mr. Ford will get title is 125,000, which practically doubles the all-season or primary horsepower to be developed at Dam No. 2 (approximately 500,000 of the horsepower that is to be developed at Dam No. 2 will not be available 365 days in the year).

Inasmuch as I am without authority in law to accept Mr. Ford's offer or dispose of the property as a whole, either by sale or by lease, it is peculiarly the province of Congress to weigh the considerations which will pass to the respective parties to the proposed arrangement and to determine whether or not the advantage to the Government in having nitrate plant No. 2 maintained in readiness for the manufacture of explosives and in actual production of fertilizer, together with the improvement to navigation, is of sufficient importance to justify the proposed departure from the present policy of the law in regard to dealing with the water-power resources of the Nation, and to warrant leasing to Mr. Ford Government property for so long a period at the rental proposed.

If Mr. Ford's proposal be accepted by Congress, I suggest that there should be certain modifications made to safeguard the Government's interest. As heretofore stated, there should be some assurance that the contracts made by his proposed company will be carried out.

I also suggest that the cost of acquiring the lands and flowage rights necessary for Dam No. 3 should be included in the sum upon which Mr. Ford is to pay 4 per cent interest as rent. The omission of the cost of these lands from this computation is more serious than would be the omission of the provision for a sinking fund, for the annual interest of 4 per cent on the cost of such lands and rights, if used for that purpose, would amortize a sum much larger than that provided for in paragraph 10 of Mr. Ford's proposal.

In case the proposed company sells any or all power developed at either or both of these dams, it should be required to do so under terms and conditions imposed by the Federal Power Commission or the Public Service Commission of Alabama, in the manner required of other power companies.

I believe it would be better policy to limit the contract to a term of 50 years to conform to the established policy of the Federal Government as set out in the water-power act. In my opinion a contract such as that proposed for a period of 100 years is not a wise general policy, in view of the unknown possibilities surrounding water-power developments and the probability of changes which may be made, especially in the transmission of power.

While paragraphs 4 and 8 of the present proposal provide that Mr. Ford's company is to pay to the United States annually the sum of $35,000 on Dam No. 2 and $20,000 on Dam No. 3 for repairs, maintenance, and operation of the dams, gates, and locks, Congress may well consider whether it would be more desirable to have Mr. Ford maintain the property and omit these payments.

If Mr. Ford's proposal be not accepted, it is my opinion that Dam No. 2 (Wilson Dam) should be completed by the Government, and that the power requirements for commercial purposes, the benefits to navigation, as well as the possible needs of the Government, would warrant this expenditure. If this were done the Government may itself undertake to sell the product to the best advantage. In such case the amount of the Government's present proposed investment would be very materially reduced, because Dam No. 3, costing from $18,000,000 to $25,000,000, would not be built. At Dam No. 2 it would not be necessary to make the full installation of power plant until the market should require such installation. This partial installation would effect a saving of present investment in at least the sum of $3,000,000, leaving, according to the Chief of Engineers' estimate, not to exceed $22,000,000 to be invested by the Government at this time, instead of $40,000,000 to $50,000,000. The analysis made by the Chief of Engineers (hereto attached as Exhibit B) shows a loss in excess of $15,000,000 due to delay in the receipt of returns from rentals. Such a large loss would hardly be justified in case the investment is to ultimately bear but 4 per cent interest if there were not other considerations which are beneficial both to the Government and the people of that vicinity.

At this time when there is a large amount of unemployment it is not without importance to consider the advantage to the Nation of the employment of the large amount of labor required in undertaking this development. I therefore urge that Congress give early consideration to this matter, not only to settle a controverted question, but to furnish employment on a large scale.

I am attaching hereto the following exhibits which may prove helpful to Congress:

Exhibit A: Proposal of Henry Ford dated July 8, 1921:

Exhibit B: Letter from Henry Ford dated January 11, 1922, modifying the proposal of July 8, 1921;
Exhibit C: Proposal of Henry Ford dated January 25, 1922;
Exhibit D: Memorandum from the Chief of Ordnance;
Exhibit E: Memorandum from the Chief of Engineers;
Exhibit F: Cost statement of Nitrate Plants No. 1 and No. 2 and Warrior-Sheffield Power Station and Transmission line; and
Exhibit G: Memorandum from Maj. John A. Smith, Judge Advocate General's Office.

I shall be glad to place at the disposal of Congress any additional information which it may desire.

Respectfully,

JOHN W. WEEKS, *Secretary of War.*

EXHIBIT A.

DEARBORN, MICH., *July 8, 1921.*

Gen. LANSING H. BEACH,
Chief of Engineers, United States Army, Washington, D. C.

SIR: In response to your advice that the Government invites an offer for the power at the Muscle Shoals Wilson Dam, on my part or on the part of a company to be formed by me (and throughout this proposal to be called the company), I hereby and through you place at the disposal of the President, the Secretary of War, and Congress the following tender:

1. If the United States will promptly resume construction work on the Wilson Dam, and as speedily as possible complete the construction of the dam, and progressively install hydroelectric facilities and equipment for generating 600,000 horsepower, then the company will agree to lease from the United States the Wilson Dam, its power house, and all of its hydroelectric and operating appurtenances, together with all lands and buildings owned by the United States, connected with and adjacent to either end of the Wilson Dam, for a period of one hundred (100) years from the date of the completion of the dam and its power-house facilities; and the company will pay to the United States six (6) per cent on the remaining cost of the locks, the dam, and power-house facilities, taken at twenty million dollars ($20,000,000), in payments of one million two hundred thousand ($1,200,000) annually, except that during the first six years of the lease period payments shall begin and be made annually as follows:

Two hundred thousand dollars ($200,000) one year from the date when 100,000 horsepower is generated and continuously ready for service, and thereafter two hundred thousand dollars ($200,000) annually at the end of each year for five years. After the first six years payment of one million two hundred thousand dollars ($1,200,000) shall be made annually, at the end of each calendar year, during the lease period.

2. At the beginning of the seventh year of the lease period, and annually thereafter, the company will pay to the United States a sum not greater than thirty-nine thousand five hundred thirty-seven dollars ($39,537) to retire, during the remaining period of ninety-four (94) years, the total cost of the Wilson Dam and its power house, substructures, superstructures, machinery and appliances, including locks, all taken at forty million dollars ($40,000,000); the sinking fund investments to bear the highest rate of interest obtainable, but not less than four per cent (4 per cent) per annum.

3. The company will further agree to pay to the United States thirty-five thousand dollars ($35,000) annually for repairs, maintenance, and operation of the dam, gates, and locks at Wilson Dam; all repairs, maintenance, and operation of the same to be under the direction, care, and responsibility of the United States during the hundred (100) year period.

4. The company will furnish the United States, free of charge, delivered at a point on the lock grounds designated by the Chief of Engineers, electric power not to exceed two hundred (200) horsepower, for the operation of the locks.

5. If the United States shall accept the above proposal for leasing the Wilson Dam and its power installation, then as a condition of acceptance the company will ask that, immediately upon release of suitable construction equipment and facilities at the Wilson Dam, and upon the release of labor forces, the United States will forthwith proceed to construct and fully complete with reasonable promptness Dam No. 3, as designed and proposed by the United States Engineers, the power installation at Dam No. 3 to be taken in this proposal at two hundred fifty thousand (250,000) horsepower.

6. When the lock, dam, and power house installation at Dam No. 3 are completed, the company offers to lease Dam No. 3, its power house and all of its hydroelectric and operating appurtenances for a period of one hundred (100) years from the date of the completion of the dam and its power house facilities, and the company will pay to the United States six per cent (6 per cent) on the cost of the dam, lock, and power house facilities, taken at a cost of eight million dollars ($8,000,000), in payments of four hundred eighty thousand dollars ($480,000) annually, except that during the first three years of the lease period payments shall begin and be made annually as follows:

One hundred sixty thousand dollars ($160,000) one (1) year from the date when eighty thousand (80,000) horsepower is generated and continuously ready for service, and thereafter one hundred sixty thousand dollars ($160,000) annually at the end of each year for two years. If and when, after the first three years, the entire power-house generating equipment of two hundred fifty thousand (250,000) horsepower is continuously ready for service, payments of four hundred eighty thousand dollars ($480,000) shall be made annually at the end of each calendar year during the remaining ninety-seven (97) years of the lease period.

7. At the beginning of the fourth (4th) year of the lease period, and annually thereafter, the company will pay to the United States a sum not greater than seven thousand and ten dollars ($7,010), to retire during the remaining period of ninety-seven (97) years the total cost of Dam No. 3 and its power house, substructures, superstructures, machinery, and appliances, including lock, all taken at eight million dollars ($8,000,000), the sinking-fund investments to bear the highest rate of interest obtainable, but not less than four (4) per cent per annum.

8. The company will further agree to pay to the United States twenty thousand dollars ($20,000) annually for repairs, maintenance, and operation of dam, gates, and lock at Dam No. 3; all repairs, maintenance, and operation of the same to be under the direction, care, and responsibility of the United States during the one hundred (100) year period.

9. The company will furnish the United States, free of charge, at Dam No. 3, to be delivered at a point on the lock grounds designated by the Chief of Engineers, electric power not in excess of one hundred (100) horsepower for the operation of the lock.

10. If the United States shall accept the above several proposals in their entirety, then the company offers to purchase from the United States the following properties, viz:

(*a*) All of the property at nitrate plant No. 2 and its adjacent steam-power plant, land, building, material, machinery, fixtures, equipment, apparatus, appurtenances, tools, supplies, and the right, license, and privilege to use any and all of the patents, processes, methods, and designs which have been acquired by the United States (and which the United States has a right to transfer and assign the use of to any purchaser of nitrate plant No. 2), together with the sulphuric-acid units now in storage on the premises.

(*b*) All of the properties of the United States at nitrate plant No. 1, its steam-power plant, land, buildings, material, machinery, fixtures, equipment, apparatus, appurtenances, tools, supplies, and the right, license, and privilege to use any and all of the patents, processes, methods, and designs appertaining to said nitrate plant No. 1 which have been acquired by the United States; but nitrate plant No. 1 shall not be operated as an air nitrogen fixation plant as designed to be.

(*c*) All of the property at the quarry of the United States, known as the Waco quarry, including all material, buildings, quarry tracks, machinery, railroad tracks, tools, and other equipment.

(*d*) Also the steam plant, built and owned by the Government at Gorgas, Ala., on the Warrior River, including material, buildings, machinery, fixtures, apparatus, appurtenances, tools, supplies, and the transmission line from the Gorgas steam plant to nitrate plant No. 2, at Muscle Shoals; the United States to acquire title to the right-of-way lands necessary along the transmission line, and also to acquire the title to the land and site occupied by the steam plant and by all Government buildings and other structures at the Gorgas steam plant.

For the foregoing plants and other properties, as set forth and described above under *a*, *b*, *c*, *d*, the company offers to pay the United States five million dollars ($5,000,000), the terms of payment to be agreed upon between the Secretary of War and the company, the Secretary of War having the authority to dispose of said plants and other properties as above enumerated.

11. At any time prior to the expiration of said lease period of one hundred (100) years, the company shall have the right to negotiate with the Government for a renewal of the leases for the two above dams, their power houses, etc. In the event of disagreement as to terms of the renewal, the United States and the company shall each appoint an arbitrator, and these arbitrators shall choose a third. The decision of the arbitration board of three shall be final and binding upon both parties.

12. If the United States agrees to sell, and the company purchases these several properties, nitrate plants, quarry, steam power plants, transmission lines, etc., and at prices and on terms mutually satisfactory, the company will operate nitrate plant No. 2 to approximate present capacity in the production of nitrogen and other fertilizer compounds, with the following special objectives:

(*a*) To determine by research on a commercial scale whether by means of electric furnace methods and industrial chemistry there may be produced fertilizer compounds of higher grade and at cheaper prices than the fertilizer-using farmers have in the past been able to procure, and to determine whether in a broad way the application of electricity and industrial chemistry may do for the agricultural industry of the country what they have economically accomplished for other industries.

(*b*) To maintain nitrate plant No. 2 in a state of readiness to be promptly operated in the manufacture of materials necessary in time of war for the production of explosives.

13. If the above offers of the company are accepted by the United States, and if the agreement between the Secretary of War and the company can be made for the purchase of the above-described properties, it will naturally and reasonably follow that the buyers of fertilizers will desire to be assured that fertilizers produced at nitrate plant No. 2 shall be sold at fair prices and without excessive profits.

14. To meet this reasonable expectation on the part of the farmers of the country who buy fertilizer, the company proposes that the maximum net profit which it shall make in the manufacture and sale of fertilizer products at nitrate plant No. 2 shall not exceed eight per cent (8 per cent). The company also suggests that a board be created composed of officially designated members and representatives of farmers' national organizations, such as the American Farm Bureau Federation, the National Grange, and the Farmers' Union, together with a representative from the Bureau of Markets of the Agricultural Department (to be an ex officio member of this board, serving in an advisory capacity, without right to vote) and two representatives of the company. It is expected that the board shall have access to the books and records of the company at any reasonable time and that its duty shall be to investigate costs and revenues and to determine for public information whether the profits of the company are being kept within the established limit of eight per cent (8 per cent), as above set forth; and it is also suggested that this board determine upon the territorial distribution of fertilizers produced at nitrate plant No. 2. If and when this board can not agree upon its findings and determinations, then the points of disagreement by the board, at any time, shall be referred to the Federal Trade Commission for arbitration and settlement, and the decision of the trade commission shall be final and binding upon the board.

15. Whenever, in the event of war, the United States shall require any part of the operating facilities of nitrate plant No. 2 for the production of materials necessary in the manufacture of explosives then the United States shall have the immediate right, upon notice to the company, to take over and operate the same for the national defense of the country, and the company will supply the United States with hydroelectric power necessary for such operations, together with the use of all patented processes which the United States may need in time of war for munition purposes and which the company owns and has the right to use, and any of the company's personnel and operating organization required in times of war for operating any part of nitrate plant No. 2 in the manufacture of materials for explosives shall be at the disposal of the United States. All duly authorized agents and representatives of the United States shall have free access at all reasonable times during the lease period to inspect and study all of the operations, chemical processes, and methods employed by the company at nitrate plant No. 2, provided that such agents and representatives shall not use the information and the facts about any of the company's operations, except for the benefit and protection of the United States.

16. It will be obvious to you that, should the above proposals and offers of the company be accepted by the United States, there will be many details in the lease and purchase agreements to be worked out; but it is believed that the above will furnish all of the information required for decision by the United States upon the tender herein submitted.

17. The above proposals of the company are submitted as a whole and not in part.

18. The plans of the company with respect to its hydroelectric power needs are such that it is hoped that you, and those to whom you refer these proposals, will be able to arrive at prompt decisions regarding the company's offer, and that it can be confidently expected that the undersigned will very soon receive an answer to this communication.

Respectfully,

HENRY FORD.

EXHIBIT B.

DEARBORN, MICH., *January 11, 1922.*

Hon. J. W. WEEKS,
Secretary of War, Washington, D. C.

MY DEAR MR. SECRETARY: Referring to offer of July 8, 1921.

The company proposes to undertake the construction and completion, at actual cost, of all the work referred to; and when completed and ready for operation will pay the United States Government as annual rental of the property an amount equal to 4 per cent of the total cost of such construction.

Very truly, yours,

HENRY FORD.

EXHIBIT C.

PROPOSAL OF HENRY FORD FOR THE COMPLETION AND LEASING OF THE DAMS AND HYDROELECTRIC POWER PLANTS AT MUSCLE SHOALS AND FOR THE PURCHASE OF NITRATE PLANT NO. 1, NITRATE PLANT NO. 2, THE WACO QUARRY, AND THE GORGAS WARRIOR RIVER STEAM PLANT, ALL IN THE STATE OF ALABAMA.

Whereas the United States, through the Chief of Engineers, United States Army, invited the undersigned to submit an offer for the power to be developed at the Muscle Shoals Wilson Dam (hereinafter referred to as Dam No. 2); and

Whereas the undersigned did, under date of July 8, 1921, submit to the Chief of Engineers an offer for the consideration of the President, the Secretary of War, and Congress, which offer proposed a lease based upon the completion of Dam No. 2, and the construction of Dam No. 3 (as designated by the United States Engineers in House Doc. 1262, 64th Cong., 1st sess., and hereinafter referred to as Dam No. 3) and of their power houses, by the United States, and the payment by the undersigned of a fixed annual rental therefor, and proposed to purchase Nitrate Plant No. 1 at Sheffield, Ala.; nitrate plant No. 2 at Muscle Shoals, Ala.; Waco quarry, near Russellville, Ala.; and the Warrior steam plant at Gorgas, Ala., and all transmission lines connected with said plants; and

Whereas the undersigned, at the invitation of the Secretary of War, did, on January 11, 1922, submit a modification of his former proposal, based upon the construction and completion by a company to be formed by him, of all the work referred to in the offer of July 8, 1921, aforesaid, the actual cost of said work to be borne by the United States, and agreed on behalf of said company to pay four per cent (4 per cent) of the actual cost of completing said plants, structures, works, and improvements as annual rental for the lease thereof;

Now, therefore, in lieu of said offer of July 8, 1921, and in accordance with said modification of January 11, 1922, the undersigned hereby submits to the Secretary of War, and through him for appropriate action by the President and Congress, the following offer, which shall become a binding agreement upon approval of same by Congress:

1. For the purpose of carrying out the terms of this agreement, the undersigned will form a corporation (hereinafter referred to as the company), to be controlled by the undersigned, which company will immediately enter into and execute all necessary or appropriate instruments of contract to effectuate this agreement.

2. The company shall complete for the United States the construction work on Dam No. 2, its locks, power house, and all necessary equipment, all in accordance with the plans and specifications prepared or to be prepared or approved by the Chief of Engineers, United States Army, and progressively install the hydroelectric equipment in said power house adequate for generating approximately six hundred thousand (600,000) horsepower, all the work aforesaid to be performed as speedily as possible at actual cost and without profit to the company, it being understood that the necessary lands and flowage rights, including lands for railway and terminal connections, have been or will be acquired by the United States.

3. The company will lease from the United States Dam No. 2, its power house and all of its hydroelectric and operating appurtenances, except the locks, together with all lands and buildings owned or to be acquired by the United States connected with or adjacent to either end of the said dam, for a period of one hundred (100) years from the date when structures and equipment of a capacity of one hundred thousand (100,000) horsepower are constructed and installed and ready for service, and will pay to the United States as annual rental therefor four per cent (4 per cent) of the actual cost of acquiring lands and flowage rights, and of completing the locks, dam, and power-house facilities (but not including expenditures and obligations incurred

prior to approval of this proposal by Congress), payable annually at the end of each lease year, except that during and for the first six (6) years of the lease period the rentals shall be in the following amounts and payable at the following times, to wit: Two hundred thousand dollars ($200,000) one (1) year from the date when one hundred thousand (100,000) horsepower is installed and ready for service, and thereafter two hundred thousand dollars ($200,000) annually at the end of each year for five (5) years.

4. The company will further pay to the United States during the period of the lease of Dam No. 2 thirty-five thousand dollars ($35,000) annually, in installments quarterly in advance, for repairs, maintenance, and operation of Dam No. 2, its gates and locks, it being understood that all necessary repairs, maintenance, and operation thereof shall be under the direction, care, and responsibility of the United States during the said one hundred (100) year lease period; and the company, at its own expense, will make all necessary renewals and repairs incident to efficient maintenance of the power house, substructures, superstructures, machinery, and appliances appurtenant to said power house, and will maintain the same in efficient operating condition.

5. At all times during the period of the lease of Dam No. 2 the company will furnish to the United States, free of charge, to be delivered at any point on the lock grounds designated by the Chief of Engineers, United States Army, electric power to an amount necessary for the operation of the locks, but not in excess of two hundred (200) horsepower.

6. As soon as the release of suitable construction equipment and labor forces at Dam No. 2 will permit, or at an earlier date if desired by the company, the company shall construct and complete for the United States Dam No. 3, its lock, power house, and all necessary equipment, all in accordance with plans and specifications prepared and to be prepared by the Chief of Engineers, United States Army, or by the company, at its option, and approved by the Chief of Engineers, United States Army, and progressively install the hydroelectric equipment in said power house adequate for generating approximately two hundred fifty thousand (250,000) horsepower, all the work aforesaid to be performed as speedily as possible at actual cost and without profit to the company, it being understood that the necessary lands, flowage rights, and rights of way shall be acquired by the United States.

7. The company will lease from the United States Dam No. 3, its power house and all of its hydroelectric and operating appurtenances, except the lock, together with all lands and buildings owned or to be acquired by the United States connected with or adjacent to either end of the said dam, for a period of one hundred (100) years from the date when structures and equipment of a capacity of eighty thousand (80,000) horsepower are constructed and installed and ready for service, and will pay to the United States as annual rental therefor four per cent (4 per cent) of the actual cost of constructing the lock, dam, and power-house facilities, payable annually at the end of each lease year, except that during and for the first three (3) years of the lease period the rentals shall be in the following amounts and payable at the following times, to wit: One hundred sixty thousand dollars ($160,000) one (1) year from the date when eighty thousand (80,000) horsepower is installed and ready for service, and thereafter one hundred sixty thousand dollars ($160,000) annually at the end of each year for two (2) years.

8. The company will further pay to the United States during the period of the lease of Dam No. 3 twenty thousand dollars ($20,000) annually, in installments, quarterly, in advance, for repairs, maintenance, and operation of Dam No. 3, its gates, and lock, it being understood that all necessary repairs, maintenance, and operation thereof shall be under the direction, care, and responsibility of the United States during the said one hundred (100) year period; and the company at its own expense will make all necessary renewals and repairs incident to the efficient maintenance of the power house, substructures, superstructures, machinery, and appliances appurtenant to said power house, and will maintain the same in efficient operating condition.

9. At all times during the period of the lease of Dam No. 3 the company will furnish to the United States, free of charge, to be delivered at any point on the lock grounds designated by the Chief of Engineers, United States Army, electric power necessary for the operation of the said lock, but not in excess of one hundred (100) horsepower.

10. For the purpose of enabling the Government to create and provide a sinking fund to retire the cost of Dam No. 3 at the end of one hundred (100) years, the company will at the beginning of the fourth (4th) year of the lease period, and semiannually thereafter for the remaining term of the lease, pay to the United States Government the sum of three thousand five hundred and five dollars ($3,505); and for the purpose of enabling the Government to create and provide a sinking fund to retire the cost of Dam No. 2 at the end of one hundred (100) years the company will at the beginning of the seventh (7th) year of the lease period, and semiannually thereafter for the remaining term of the lease, pay to the United States Government the sum of nineteen thousand eight hundred and sixty-eight dollars ($19,868).

11. The company agrees to purchase from the United States and the United States will sell the following properties, namely:

(*a*) All of the property constituting nitrate plant No. 2 (as officially known and designated), including lands, power plants, buildings, material, machinery, fixtures, equipment, apparatus, appurtenances, tools, and supplies, and the right, license, and privilege to use any and all of the patents, processes, methods, and designs which have been acquired and may be transferred or assigned to a purchaser of nitrate plant No. 2 by the United States, together with the sulphuric-acid units now in storage on the premises.

(*b*) All of the property constituting nitrate plant No. 1 (as officially known and designated), including lands, power plants, buildings, material, machinery, fixtures, equipment, apparatus, appurtenances, tools, and supplies, and the right, license, and privilege to use any and all of the patents, processes, methods, and designs which have been acquired and may be transferred to a purchaser of nitrate plant No. 1 by the United States, but the company shall not be obligated to operate nitrate plant No. 1 as an air nitrogen fixation plant.

(*c*) All of the property constituting the Waco quarry (as officially known and designated), including rights of way and buildings, material, quarry tracks, machinery, railroad tracks, appurtenances, tools, and supplies.

(*d*) All of the property constituting the steam power plant, built and owned by the Government at Gorgas, Ala., on the Warrior River, including lands, rights of way, buildings, machinery, material, fixtures, apparatus, appurtenances, tools, and supplies and the transmission line from the Gorgas steam plant to nitrate plant No. 2 at Muscle Shoals, and all other transmission lines belonging to the United States and connected with any of the aforesaid Government properties. The United States shall acquire all necessary easements or titles for right-of-way lands along all transmission lines, and convey same to the company, and the United States shall acquire the title to the land and site occupied by the said steam plant and by all Government buildings and other Government structures at the Gorgas plant, which will be conveyed to the company.

12. As the purchase price for the foregoing plants and properties to be conveyed to the company by the United States, the company will pay to the United States five million dollars ($5,000,000) in five installments, as follows: One million dollars ($1,000,000) upon the acceptance of this offer, and one million dollars ($1,000,000) annually thereafter until the purchase price is fully paid, with interest at the rate of five per cent (5 per cent) per annum on deferred payments, with the privilege of anticipating any or all such payments, possession to be delivered upon payment of the first of said installments, and deeds of conveyance to be delivered when full payment for said property has been made.

13. This proposal contemplates and it is agreed that the purchase price for the property aforesaid shall not be diminished by reason of depreciation due to use or wear of buildings, machinery, and equipment or to the action of the elements, nor shall any claim be made for losses in or diminution of quantity of tools and supplies due to upkeep and maintenance during the period between the date hereof and the date of delivery of possession of said property; it being further understood that no inventory of the property need be taken, but that due care will be exercised by the United States in preserving and safeguarding the aforesaid real and personal property intact until possession thereof passes to the company. If any part or parts of the aforesaid plants necessary for proper operation of same have been removed by the United States, said part or parts shall be returned when possession of said plants passes to the company. Deeds of conveyance of real property shall warrant the title to be good and unencumbered.

14. The company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control, and further agrees:

(*a*) To determine by research whether by means of electric-furnace methods and industrial chemistry there may be produced on a commercial scale fertilizer compounds of higher grade and at lower prices than fertilizer-using farmers have in the past been able to obtain, and to determine whether in a broad way the application of electricity and industrial chemistry may accomplish for the agricultural industry of the country what they have economically accomplished for other industries.

(*b*) To maintain nitrate plant No. 2 in its present state of readiness, or its equivalent, for immediate operation, in the manufacture of materials necessary in time of war for the production of explosives.

15. In order that the farmers may be supplied with fertilizers at fair prices and without excessive profits, the company agrees that the maximum net profit which it

shall make in the manufacture and sale of fertilizer products at nitrate plant No. 2 shall not exceed eight per cent (8 per cent) of the actual annual cost of production thereof. In order that this provision may be carried out the company agrees to the creation of a board of not more than nine (9) voting members, chosen as follows: The three (3) leading representative farm organizations, national in fact, namely: The American Farm Bureau Federation, The National Grange, The Farmers Educational and Cooperative Union of America (or their successors), shall each designate not more than seven (7) candidates for said board. The President shall nominate for membership on this board not more than seven (7) of these candidates, selected to give representation to each of the above-mentioned organizations, said nominations to be made subject to confirmation by the Senate; and there shall be two voting members of said board selected by the company. A representative of the Bureau of Markets, Department of Agriculture (or its legal successor), to be appointed by the President, shall also be a member of the board serving in an advisory capacity without the right to vote. The said board shall determine what has been the cost of manufacture and sale of fertilizer products and the price which has been charged therefor, and, if necessary for the purpose of limiting the annual profit to eight per cent (8 per cent) as aforesaid, shall regulate the price at which said fertilizer may be sold by the company. For these purposes, said board shall have access to the books and records of the company at any reasonable time. The said board shall also determine the equitable territorial distribution of fertilizer products produced at nitrate plant No. 2. If and when said board can not agree upon its findings and determinations, then the points of disagreement shall be referred to the Federal Trade Commission (or its legal successor) for arbitration and settlement, and the decision of said commission in such cases shall be final and binding upon the board.

16. Whenever, in the national defense, the United States shall require all or any part of the operating facilities at nitrate plant No. 2 for the production of materials necessary in the manufacture of explosives or other war materials, then the United States shall have the immediate right, upon five days' notice to the company, to take over and operate the same, and the company will supply the United States with hydroelectric power necessary for such operations, together with the use of all patented processes which the United States may need which the company owns or has the right to use. When required for national defense any of the company's personnel and operating organization necessary for operating any part of nitrate plant No. 2 in the manufacture of materials for explosives, or other war materials, shall be at the disposal of the United States. For the facilities and services aforesaid the United States shall protect the company from losses occasioned by such use and shall return the said property in as good condition as when received and reasonably compensate the company for the use thereof. All duly authorized agents and representatives of the United States shall have free access at all reasonable times to inspect and study all of the operations, chemical processes, and methods, employed by the company at nitrate plant No. 2, provided that such agents and representatives shall not use the information and the facts concerning any of the company's operations except for the benefit and protection of the United States.

17. In order that said company may be supplied with electric power and the farmers with fertilizers after the termination of the said one-hundred-year leases, should the United States elect not to operate said power plants but determine to lease or dispose of same, the company shall have the preferred right to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon. If the said leases are not renewed or the property covered thereby is not sold to said company, its successors, or assigns, any operation or disposal thereof shall not deprive the company, its successors, or assigns, any operation or disposal thereof shall not deprive the company, its successor or assigns, of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years.

18. As a method of procedure in the event of the violation of any of the terms of this proposal or any contracts made in furtherance of its terms, the company agrees that the Attorney General may upon the request of the Secretary of War institute proceedings in equity in the District Court of the United States for the Northern District of Alabama for the purpose of canceling and terminating the lease of Dam No. 2 or Dam No. 3, or both of them, because of such violation or for the purpose of remedying or correcting by injunction, mandamus, or other process any act of commission or omission in violation of the terms of this proposal or any contract made in furtherance thereof.

19. The above proposals are submitted for acceptance as a whole and not in part. Upon acceptance, the promises, undertakings, and obligations shall be binding upon the United States, and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors and assigns; and all the necessary contracts, leases, deeds, and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed and delivered by the respective parties above mentioned.

Approved and signed by me at Dearborn, Michigan, this twenty-fifth day of January, 1922.

HENRY FORD.

Witness:
W. B. MAYO.

EXHIBIT D.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
January 28, 1922.

Memorandum for the Secretary of War:

Subject: Analysis of the Ford offer for the Muscle Shoals projects, in so far as it pertains to the interests of the Ordnance Department.

1. In compliance with your instructions of the 26th instant, the Ordnance Department has made a hurried analysis of the paper entitled, "Proposal of Henry Ford for the completion and leasing of the dams and hydroelectric power plants at Muscle Shoals and for the purchase of nitrate plant No. 1, nitrate plant No. 2, the Waco quarry, and the Gorgas Warrior River steam plant, all in the State of Alabama," supplied by the Judge Advocate General's Department, in so far as it pertains to the interests of the Ordnance Department, and submits the following comments:

NITROGEN PREPAREDNESS

The main objective of the Ordnance Department in the matter of nitrogen compounds is to make the United States able to be self-sustaining in their supply in time of need. It believes that such ability can only be achieved through the fixation of atmospheric nitrogen by one or more processes, and it further believes that the most economical and enduring method of developing nitrogen fixation is its establishment on a commercial basis.

At the present time there are two methods of nitrogen fixation which seem to be the most adaptable to American conditions, namely, the synthetic ammonia or Haber process and the cyanamid process. The first is the process of United States nitrate plant No. 1, and the second is the process of United States nitrate plant No. 2.

The Ford offer states as follows in the matter of operating and maintaining the nitrate plants:

United States Nitrate Plant No. 1—Article 11(b).—" * * * the company shall not be obligated to operate nitrate plant No. 1 as an air nitrogen fixation plant."

United States Nitrate Plant No. 2—Article 14.—"The company agrees to operate nitrate plant No. 2 at the approximate present capacity of its machinery and equipment, in the production of nitrogen and other fertilizer compounds throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes bevond its control, and further agrees:

"(*a*) To determine by research whether by means of electric-furnace methods and industrial chemistry there may be produced on a commercial scale fertilizer compounds of higher grade and at lower prices than fertilizer-using farmers have in the past been able to obtain, and to determine whether in a broad way the application of electricity and industrial chemistry may accomplish for the agricultural industry of the country what they have economically accomplished for other industries.

"(*b*) To maintain nitrate plant No. 2 in its present state of readiness or its equivalent, for immediate operation, in the manufacture of materials necessary in time of war for the production of explosives."

Article 16 provides for the taking over and operation of the No. 2 plant by the Government whenever such action is necessary in the national defense and provides that at all reasonable times all duly authorized agents and representatives of the United States shall have free access to inspect and study the operations of the plant.

The process installed at the No. 1 plant, which has not been thoroughly worked out there, has been developed and placed in commercial operation on a limited scale by the Atmospheric Nitrogen Corporation in their Syracuse plant. The objective of the Ordnance Department with reference to this process has, therefore, been achieved and it is not necessary from the standpoint of nitrogen preparedness that the No. 1 plant be perfected and operated.

If the Ford offer means, in the case of the No. 2 plant, that such plant will be operated at its approximate present capacity for the fixation of nitrogen, it is most satisfactory from the standpoint of nitrogen preparedness, for it guarantees the establish-

ment of the nitrogen fixation business on a large, long-enduring, and commercial basis. In other words, it completes the objective which the Ordnance Department believes essential for the making of the United States able to be self-sustaining in its supply of nitrogen compounds.

ORDNANCE-CONTROLLED PROPERTY TO BE TRANSFERRED.

Article 11 outlines the ordnance-controlled property which is to be transferred under the offer and includes (*a*) nitrate plant No. 2, (*b*) nitrate plant No. 1, (*c*) Waco quarry, (*d*) Gorgas power plant on Warrior River and transmission line from Gorgas plant to plant 2.

Item (*d*) requires the United States to acquire title to the lands on which the power plant and transmission line are located.

In respect to (*a*) it is desired to point out that the Ordnance Department now has a contract (T–66) with the American Cyanamid Co. which contains the following clause:

"Article XIX. Sale of plants: If upon cessation of this war or for any other reason the United States determines to cease the construction, equipment, or operation of any of the said plants and to dispose of the same, the agent shall be given the first opportunity (for a reasonable period of time not to exceed six months after receipt of written notice stating the determination of the United States to dispose of the same, and the material terms upon which such disposition will be made) to purchase the same upon as favorable terms as the United States is willing to accept therefor before the United States shall sell the same to any other party."

It is believed that due consideration should be taken of this right of the American Cyanamid Co.

In respect to (*b*) the offer is believed to be satisfactory.

In respect to (*c*) the offer is believed to be satisfactory.

In respect to (*d*) it should be noted that the Ordnance Department now has a contract (T–69) with the Alabama Power Co. which provides definitely for the sale of these properties to that company. The provisions of the contract covering such sale are not quoted on account of length. It is believed that our contractual obligations require us to meet both the spirit and letter of this contract unless the Alabama Power Co. is willing to surrender or sell its rights.

PURCHASE PRICE OF PLANTS.

Article 12 of the offer states that—

"As the purchase price for the foregoing plants and properties to be conveyed to the company by the United States the company will pay to the United States five million dollars ($5,000,000) * * *."

If this is considered to be only a part of the consideration to be paid, it is not entirely fair to match it up against the estimated salvage value of the properties to be transferred. However, the following summary of estimated salvage values is submitted. No offers have been received to substantiate these figures, although the steam plant at nitrate plant No. 2 is now leased on the basis of $6,000,000 valuation.

Estimated salvage value of ordnance property in the State of Alabama.

	Approximate cost.	Salvage value		
		As operating concern.	As scrap.	As operating concern and scrap.
United States nitrate plant No. 1, 1,900 acres of land	$12,888,000	(1)	$600,000	$600,000
United States nitrate plant No. 2, 2,300 acres of land, including the Muscle Shoals substation (surplus materials at plant 2, costing $1,500,000 and having salvage value of $900,000, are included in plant 2)	69,674,000	(2)	7,250,000	[3] 11,640,000
Warrior generating plant	3,337,000	$3,000,000	800,000	3,000,000
Warrior substation	384,000			
Drifton railroad	50,000			
Warrior-Muscle Shoals transmission line	905,000	[4] 675,000	60,000	675,000
Waco quarry, 400 acres of land	1,179,000	357,000	102,000	357,000
Total	88,417,000	10,032,000	8,812,000	16,272,000

[1] None, with possible exception of the power plant.

[2] None, unless the Wilson Dam is completed with exception of 60,000 kio watt steam-electric power plant which has value of possibly $6,000,000. The value of United States nitate plant No. 2 as an operating concern depends mainly upon the price which must be paid for power for its operation. If power is to cost $0.004 per k. w. h. the plant has practically no earning power and th erefore has no value. However, if power can be obtained at $0.001 per k. w. h. the plant has an earning capacity and corresponding value.

[3] Basis of steam plant as operating concern and balance of plant as scrap.

[4] 75 per cent of cost.

In this connection it should be noted also that before the United States can turn over to Mr. Ford all of the properties that he desires that some sort of an arrangement will have to be concluded between the United States and the American Cyanamid Co. which may require a money consideration and arrangements will also have to be concluded between the United States and the Alabama Power Co., which will undoubtedly require a substantial money consideration.

SUMMARY.

The Ford offer from the standpoint of the Ordnance Department has the very important advantage of materially assisting in the development of nitrogen preparedness and has the disadvantages of conflicting with contractual obligations with the American Cyanamid Co. and the Alabama Power Co. and of making a net return to the Government of less than $5,000,000 for properties which have an estimated salvage value of some $16,000,000.

The difference, $11,000,000, appears, therefore, to be the price which the United States is paying for nitrogen preparedness. If the plant is diverted to any purposes which do not include nitrogen fixation, this asset is lost to the Government.

C. C. WILLIAMS,
Major General, Chief of Ordnance, United States Army.

EXHIBIT E.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, January 30, 1922.

Memorandum for the Secretary of War.

Subject: Analysis of Mr. Ford's offer for Muscle Shoals power plants.

The following analysis of Mr. Ford's offer for the Muscle Shoals power plant is submitted for your information:

Under the terms of the offer, as concerns hydroelectric plants at Muscle Shoals:

The United States is to furnish the funds for the completion of Dam No. 2, and for the construction of Dam No. 3, including power generating machinery and structures, and is to operate and maintain the dams and locks.

A company to be formed by Mr. Ford is to have a 100-year lease of the power plants, beginning with the dates on which certain specified amounts of power are available at each.

In consideration of this lease the company is to pay: (*a*) $200,000 per annum for the first six years that the power plant at No. 2 is in operation; $160,000 per annum for the first three years that the power plant at No. 3 is in operation, and respectively thereafter a sum equal to 4 per cent of the net capital cost to the United States of the dams and power plants exclusive of the amounts heretofore expended, and exclusive also of the cost of acquiring flowage rights for Dam No. 3.

(*b*) Specified annual sums to cover the cost of operating and maintaining the dams.

(*c*) Specified annual amounts designed to produce the sum of $48,000,000 at the end of the lease period.

In addition the company agrees to maintain the nitrate plant in good condition for use in a war emergency and to produce nitrates at a reasonable profit. As a minor consideration it is to furnish the United States without charge a limited but sufficient amount of power for the operation of the locks at the dams.

The major item of the consideration for the lease is the payment, after specified periods, of 4 per cent on the net capital expenditures to be hereafter made by the Government in furtherance of the agreement. A determination of the adequacy of this return depends upon the future rates of interest that the Federal Government will have to pay on its loans. Considering that the Government is now paying somewhat less than 5 per cent on short-term loans, it is believed reasonable to assume that when the specified full rental begins to run, some 10 years hence, the interest rates paid by the United States will not substantially exceed 4 per cent and may be less.

The payments specified for the operation and maintenance of the dams are considered adequate to meet all ordinary operation and maintenance costs.

The annual payments specified to create an amortization or sinking fund of $48,000,000 at the termination of the lease are relatively small in amount. The sum eventually produced, with the value of the dams on the termination of the lease, should be amply sufficient to reimburse the United States for the initial capital charge, and the eventual payment of the costs, hereafter computed, of carrying the expenditures in the interval before the full payments begin.

The payments proposed do not cover a return during the period of the lease of the costs to the United States of carrying and expenditures during construction and dur-

ing the early rental periods in which the full rental at 4 per cent is not to be paid, nor does it include a return on the cost of acquiring flowage rights for Dam No. 3. An estimate of the amount in question depends upon the cost of the two dams.

The engineer department's estimate made in July, 1921, for completing Dam No. 2 with its full power equipment is in round numbers $28,000,000; and in August, 1921, for constructing Dam No. 3, $28,000,000.

The estimate of Mr. Ford's engineers for completing Dam No. 2 is in round numbers $23,230,000; for Dam No. 3, $19,000,000.

Construction of Dam No. 2 has so far advanced that foundation conditions are thoroughly established and the work required can be predicted with certainty, leaving as the only uncertainty the cost of executing the work. The condition does not exist at Dam No. 3, where the foundation work necessary will not be certainly determined until the bed of the river is laid bare. The engineer department's estimates are regarded as adequate to meet any reasonable eventuality of construction at the costs current when the estimates were prepared.

Subsequent to the preparation of the engineer department's estimates the prices of material and labor have generally declined, and it is believed that a reduction of about 10 per cent in the prior estimates is now justifiable. The cost of completing the two dams with power equipment for purposes of this analysis is therefore taken at $25,000,000 each, in round numbers, or $50,000,000 in all.

The time of completion of Dam No. 2 has been placed at 40 months, of No. 3 at 36 months. Considering, however, the fact that the hydroelectric machinery for the first 100,000 horsepower of No. 2 is already under contract, and that the first units can be put in operation prior to the eventual completion of the entire installation, it is considered that, for purposes of analysis, the time before payments begin to accrue may be placed at three years for each dam.

Interest during the preliminary period is taken at 5 per cent.

On these assumptions the carrying charges become as follows:

Dam No. 2:		
Funds required for completion		$25,000,000
Interest during construction, one-half of three years, at 5 per cent		1,875,000
Interest for first six years subsequent	$7,500,000	
Less six payments of $200,000	1,200,000	
Net deficiency		6,300,000
Total accrued interest before full payments begin		8,175,000
Dam No. 3:		
Funds required for completion		25,000,000
Interest during construction, one-half of three years, at 5 per cent		1,875,000
Interest for first three years subsequent	$3,750,000	
Less three payments of $160,000	480,000	
Net deficiency		3,270,000
Total accrued interest before full payments begin		5,145,000

The gross cost of carrying the expenditures during the preliminary periods will therefore be $13,320,000. Such carrying charges are not customarily considered in Government work but are here included in order that the analysis may be complete. The cost of the flowage rights for Dam No. 3 is estimated at $2,331,000, giving a total of $15,651,000.

The interest charges on this sum at 4 per cent will amount to $626,040 per annum during the life of the lease, subsequent to the preliminary period. During the preliminary period these charges will increase from about $100,000, on the completion of Dam No. 2, to the ultimate figure stated. The exact amount of this annual charge will depend upon the actual costs of the dams and the periods required for construction, but it can scarcely be less than $500,000 per annum and it should not exceed $650,000 per annum.

Indirect benefits accruing to the United States are:

(*a*) The maintenance of a nitrate plant in readiness for a war emergency.

(*b*) The production, in the interest of the public welfare, of large amounts of fertilizer at a cost not exceeding the reasonable cost of production, providing that the production of nitrates adapted to fertilizing purposes is found to be practicable.

(*c*) The elimination of the cost of maintaining and operating the present imperfect facilities for navigation at Muscle Shoals, amounting to from $35,000 to $85,000 per annum.

(*d*) The advantage to interstate commerce and navigation of the far superior facilities to navigation that will be secured through the construction of the dams and locks.

The funds that have been expended on Dam No. 2 have not been included in the analysis, for the reason that neither the acceptance nor the rejection of Mr. Ford's offer would restore any substantial portion of them to the Public Treasury. If Dam No. 2 be not completed, either by Mr. Ford's company, the United States, or otherwise, the work done will be wholly without value within a brief period of years, and the only recovery possible from the investment already made will be the scrap value of such machinery as can be disposed of, too small in amount to affect the present analysis.

LANSING H. BEACH,
Major General, Chief of Engineers.

EXHIBIT F.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, November 18, 1921.

From: Chief of Ordnance.
To: Secretary of War.
Subject: Cost of United States nitrate plants Nos. 1 and 2 and Warrior-Sheffield power station and transmission line.

1. In accordance with your verbal request, there is attached hereto a summary of the costs of the plants enumerated above.

C. C. WILLIAMS,
Major General, Chief of Ordnance, U. S. Army.

Cost statement of United States nitrate plants Nos. 1 and 2 and Warrior-Sheffield power station and transmission line.

[Submitted by G. B. Attersall, chief Accounts Branch, Nitrate Division, O. O., Nov. 1, 1921.]

UNITED STATES NITRATE PLANT NO. 1.

Chemical plant		$7,134,785.00
Oxidation plant	$1,706,976.63	
Soda-recovery plant	6,258.10	
Process plant	4,216,854.85	
Neutralization plant	109,978.56	
Coal and coke storage	35,651.76	
Gas plant	551,591.18	
Concentration plant	289,083.20	
Ammonium nitrate plant	218,390.72	
Shops		314,076.00
Machine shop	97,624.51	
Storehouse	140,686.72	
Oil house	2,492.81	
Warehouses	73,271.96	
Power house		1,271,665.23
Land		615,127.20
Village		2,526,276.28
Permanent village	1,597,978.26	
Temporary village	928,298.02	
Public works		1,026,011.60
Roads and walks	36,663.00	
Sewer system	212,297.33	
Water system	496,323.81	
Railways	179,438.58	
Electric distribution system	101,288.88	
Total		12,887,941.31
Operations: Sheffield operation and maintenance to July 1, 1920		794,359.85
Grand total		13,682,301.16
Maintenance to July 1, 1921		75,506.42

UNITED STATES NITRATE PLANT NO. 2.

Chemical plant		$35,984,090 55
Raw material and storage group	$2,809,361.53	
Carbide group	5,768,305.82	
Cyanamid group	4,987,045.31	
Liquid air group	4,005,503.09	
Ammonia gas group	3,710,872.79	
Nitric acid group	12,627,103.80	
Ammonium nitrate group	1,236,075.39	
Process steam plant	559,577.74	
Laboratory	280,245.08	
Shops		2,696,481.30
Engine terminal and machine shops	937,049.35	
Blacksmith shop	187,284.30	
Woodworking shop	168,202.88	
Warehouse	567,662.53	
Switch house	495,772.14	
Foundry	90,650.64	
Gate building	249,859.46	
Power house		12,326,392.23
Land		237,711.00
Village		3,121,193.31
Ice plant	166,312.32	
Permanent dwellings	1,984,120.64	
Temporary dwellings	(1)	
Hospital	142,877.97	
First quarters hotel	586,924.89	
Soldiers' barracks	240,957.49	
Public works		8,843,007.62
Roads and walks	583,201.94	
Sewer system	1,132,606.80	
Water system	2,265,452.59	
Railways	2,025,478.13	
Trolley lines	173,393.99	
Fencing	107,641.25	
Telephone system	22,555.46	
Electrical distribution system	2,532,677.46	
Inventories (approximately one-half of these inventories have been disposed of)		3,043,516.20
Waco Quarry		1,302,962.88
Construction	1,250,000.00	
Land	52,962.88	
Total		67,555,355.09
Operations		3,424,496.85
Rockwood quarry	986,858.85	
Muscle Shoals	1,840,568.32	
Ordnance maintenance to July 1, 1920	597,069.68	
Grand total		70,979,851.94
Maintenance to July 1, 1921		201,674.63

WARRIOR-SHEFFIELD POWER STATION AND TRANSMISSION LINE.

Warrior generating plant	$3,417,702.70
Warrior substation	383,756.35
Transmission line	938,057.35
Muscle Shoals substation [2]	189,843.99
Drifton Railroad	50,421.94
Total	4,979,782.33
Maintenance to July 1, 1920	25,804.57
Maintenance to July 1, 1921	7,056.82

[1] Temporary buildings, the cost of which was $5,174,377.19, have been allocated to the cost of the permanent plant as overhead.
[2] Located on Government-owned land at Muscle Shoals, Ala

EXHIBIT G.

WAR DEPARTMENT,
OFFICE OF THE JUDGE ADVOCATE GENERAL,
Washington, January 28, 1922.

Memorandum for the Secretary of War.
Subject: Legal questions involved in Henry Ford's Muscle Shoals proposal.

Instead of discussing at length the legal points involved in Henry Ford's Muscle Shoals proposal, you will observe that this subject has all been covered in one short paragraph in the draft submitted. I am transmitting herewith, however, a copy of my notes covering this subject, originally intended for your consideration as a part of your contemplated report to Congress, which you may find helpful or avaliable for your use if needed.

JOHN A. SMITH, *Major, Judge Advocate.*

NOTES.

Shortly after receipt by me of the offer of Henry Ford for the leasing of the dams and proposed power plant at Muscle Shoals and disposition of the power to be developed at that place, my attention was invited to certain provisions contained in the contract with the Air Nitrates Corporation, dated June 8, 1918, under which nitrate plant No. 2 was constructed, granting to said company an option to purchase same under certain conditions; also the provisions of an agreement entered into with the General Chemical Co. for the use of its patents and processes in the construction and operation of nitrate plant No. 1, which placed certain limitations and restrictions upon the use of said patents and processes and enjoined secrecy on the part of the Government as long as the Government shall continue to use said processes; also to certain provisions in the contract for the construction of the Gorgas Warrior River steam plant and transmission line constructed by the Alabama Power Co. at the expense of the United States on land owned by said company, but with a provision in the contract authorizing the operation of Gorgas Warrior station under certain conditions and the sale of electricity resulting from said operation upon the payment to the United States of 1½ mills for each kilowatt-hour of energy produced, with an option to the Alabama Power Co. to purchase plant at any time subsequent to three years after the termination of the war at a value to be fixed by arbitration; and more important still, the question was raised as to my authority, in view of the provisions of the national defense act, to sell or make any other disposition of these properties, under existing laws. Accordingly these questions as they arose were, from time to time, submitted to the Judge Advocate General for opinion.

I was advised by the Acting Judge Advocate General that the only existing authority for the leasing of public property such as that contemplated herein is that granted in the act of Congress approved July 28, 1892 (27 Stat., 321), which provides for the leasing by the Secretary of War of property of the United States under his control, which may not for the time being be required for public use, for a period not to exceed five years and revocable at any time, and that the only authority for the sale of Government property that might possibly be applicable, in the absence of specific restrictions, is the general authority contained in the act of Congress, approved July 9, 1918 (40 Stat., 850), authorizing the President, through the head of any executive department, to sell war supplies, material, and equipment—

"and any building, plant, or factory acquired since April 6, 1917, including the lands upon which the plant or factory may be situated, for the production of such war supplies, materials, and equipment * * *."

With reference to my authority to sell or lease the Muscle Shoals nitrate plants, or any property acquired by the United States under the authority of section 124 of the national defense act of June 3, 1916, the Acting Judge Advocate General invited my special attention to the following provision in said act:

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital." (39 Stat., 215.)

In the same opinion the Acting Judge Advocate General said:

"It is understood by this office that Muscle Shoals was selected by authority of the President as a site for the nitrate plant authorized by the national defense act, and that plant No. 1 and the Wilson Dam and certain other facilities have been paid for in part from the $20,000,000 appropriated by the national defense act. It appears that about $16,000,000 has been expended from that appropriation, chiefly, however, for the construction of the Wilson Dam. It is understood that the land for the nitrate plant No. 1 was paid for from that appropriation but the construction of plant No. 1 and all expenses in connection with No. 2 were paid for from war appropriations for the Ordnance Department.

"It thus appears that the Muscle Shoals nitrate project, considered as a whole, was initiated by Congress by the provisions of the national defense act of June 3, 1916, and that a considerable portion of the expenditures for the plant have been made from the $20,000,000 appropriated by that act.

"In my opinion the general authority contained in the act of July 9, 1918, supra, for the sale of war supplies and plants acquired since April 6, 1917, does not apply to the Muscle Shoals project, considered as a whole. It is a rule of statutory construction that a general statute does not repeal or supersede a prior particular statute unless there is some express reference to the previous legislation on the subject, or unless there is a necessary inconsistency in the two acts standing together. * * * I consider, therefore, that the provision contained in section 124 of the national defense act directing that the plant therein authorized be operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital is applicable to this plant as a whole and is a restraint upon its sale. The same statute would prevent the lease or rental of the plant for private operation."

Acting upon the advice of the Acting Judge Advocate General, I have taken the position that I have no authority to act finally upon the Ford offer or any other offer submitted for the Muscle Shoals project as a whole, the disposition thereof, in any event, being subject to the will of Congress. It is because of such fact that I submit this proposal to Congress for appropriate action.

With reference to the option to purchase, contained in the contract for the construction of the power plant by the Alabama Power Co., covering the Gorgas Warrior steam plant and transmission lines, which contract was dated and executed December 1, 1917, the Acting Judge Advocate General has advised me that at that time there was no authority under existing law for the sale of such property, and therefore the Secretary of War, or contracting officer representing the United States, was without authority to enter into a contract for the sale of said property or for granting an option for the purchase thereof, and as the Constitution vests in Congress the sole power to dispose of and make all needful rules and regulations respecting the property of the United States, and Congress not having vested that authority in the Secretary of War or anyone else, it was beyond the power of the Secretary of War or contracting officer to bind the hands of Congress in the matter of determining to whom or upon what terms said property might be sold or otherwise disposed of. Attention is also invited to the date of the contract with the Air Nitrates Corporation for the construction of nitrate plant No. 2, which was executed on June 8, 1918. And as there was at that time no authority for the sale of said plant, the same situation exists with reference to the option granted to the Air Nitrates Corporation purporting to give to said corporation an option for a period not to exceed six months after the date of notice stating the determination of the United States to dispose of the same. This provision is nugatory and void and is not binding upon the United States.

With reference to nitrate plant No. 1, which was constructed upon plans of the General Chemical Co. and contained provisions for the use of patents and processes of said company and provided for secrecy in the use thereof, it appears that the General Chemical Co. has treated said contract as at an end and construed the same as binding only so long as the Government shall continue to use said processes. In a letter received from the General Chemical Co. under date of September 13, 1919, replying to a request for certain information from the General Chemical Co., appears the following:

"If, as we understand, your request for information was made pursuant to clause 4 of our tender of June 5, 1917, we need only remind you that by the express terms of this clause our obligation to communicate improvement to the Government was limited to the period during which the Government should continue the use of our process, and that the Government's plant for the use of that process has been shut down for nearly a year."

In reply to an inquiry as to whether or not the equipment used in the synthetic process at nitrate plant No. 1 could be sold or removed from the reservation, without restriction as to its use, the Acting Judge Advocate General said:

"The subject matter of the contract was processes and apparatus, and the machinery installed is not shown to fall within those classes, and no restrictions being set forth as to its use, may be sold without restriction or reservation as to its use, and the future use of the plant by the purchaser as a plant for manufacturing the subject matter embodied in any patents would, of course, be a question between the purchaser and any patentee owning processes to be used.

"Inasmuch as processes covered by the contract are no longer in operation or use by the Government, the prohibition relating to the exclusion of the public is no longer applicable and the equipment, not being the subject matter of the contract, may be sold for whatever purposes the Government may see fit."

With reference to the question as to whether or not the United States may transfer the right, license, and privilege to use any or all patents, processes, methods, and designs which have been acquired by the United States under the license agreement with the American Cyanamid Co., my attention has been invited to the fact that said agreement provides that the United States may transfer to the purchaser of said plant the right to avail itself of the license granted in the operation of the plant so purchased, subject, of course, to the conditions of use granted to the United States, but that it is extremely doubtful that the term "purchaser" as used in the contract could be construed to include a "lessee" of said plant.

With reference to the present use of the Gorgas Warrior steam plant by the Alabama Power Co. under the provisions of the contract for the construction thereof I am advised by the Acting Judge Advocate General that the only authority for such use at the time the contract was entered into was the authority contained in the general leasing act of July 28, 1892, which provided that any use permitted under the authority thereof shall be revocable at any time, and hence the use by the Alabama Power Co. must be construed as subject to termination at any time by the Secretary of War.

With reference to the use of the transmission line and power plant at nitrate plant No. 2, covered by the lease to the Alabama Power Co., dated November 17, 1921, attention is invited to the fact that this lease was executed under the authority of the said act of July 28, 1892, and is, by its terms, revocable at any time.

It is believed that the construction placed upon these contract provisions and upon the lease above mentioned by the law officers of the Army is correct and would be sustained in the event these questions should later arise. In any event Congress may, if it sees fit, ignore them.

STATEMENT OF HON. JOHN W. WEEKS, SECRETARY OF WAR, ACCOMPANIED BY MAJ. GEN. C. C. WILLIAMS, CHIEF OF ORDNANCE; MAJ. GEN. LANSING H. BEACH, CHIEF OF ENGINEERS; AND COL. JOHN A. HULL, ACTING JUDGE ADVOCATE GENERAL.

The CHAIRMAN. It is the desire of the committee, as I understand it, to get through with this matter as reasonably speedily as possible, and we will confine ourselves for the present entirely to the Ford matter.

Mr. Secretary, have any other proposals been made to you?

Secretary WEEKS. Yes; there are two.

The CHAIRMAN. Have you sent them to Congress?

Secretary WEEKS. I have not yet. I am having them analyzed and I will send them in a few days.

The CHAIRMAN. How soon can we expect them?

Secretary WEEKS. I should say by the end of this week.

The CHAIRMAN. Mr. Secretary, the committee would like to have you explain as fully as possible the offer of Mr. Ford, as you understand it; but before you begin with that, I desire to offer for the record section 124 of the national defense act of June 3, 1916, as follows:

"SEC. 124. *Nitrate supply.*—The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products by water power or any other power, as in his judgment is the best and cheapest to use; and is also hereby authorized and empowered to designate for the exclusive use of the United States, if in his judgment such means is best and cheapest, such site or sites, upon any navigable or nonnavigable river or rivers or upon the public lands, as in his opinion will be necessary for carrying out the purposes of this act; and is further authorized to construct, maintain, and operate at or on any site or sites so designated, dams, locks, improvements to navigation, power houses and other plants and equipment or other means than water power as in his judgment is the best and cheapest, necessary or convenient for the generation of electrical or other power and for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizers and other useful products.

"The President is authorized to lease, purchase, or acquire, by condemnation, gift, grant, or devise, such lands and rights of way as may be necessary for the construction and operation of such plants, and to take from any lands of the United States, or to purchase or acquire by condemnation materials, minerals, and processes, patented or otherwise, necessary for the construction and operation of such plants and for the manufacture of such products.

"The products of such plants shall be used by the President for military and naval purposes to the extent that he may deem necessary, and any surplus which he shall determine is not required shall be sold and disposed of by him under such regulations as he may prescribe.

"The President is hereby authorized and empowered to employ such officers, agents, or agencies as may in his discretion be necessary to enable him to carry out the purposes herein specified, and to authorize and require such officers, agents, or agencies to perform any and all of the duties imposed upon him by the provisions hereof.

"The sum of $20,000,000 is hereby appropriated, out of any moneys in the Treasury not otherwise appropriated, available until expended, to enable the President of the United States to carry out the purposes herein provided for.

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital.

"In order to raise the money appropriated by this act and necessary to carry its provisions into effect, the Secretary of the Treasury, upon the request of the President of the United States, may issue and sell, or use for such purpose or construction herein above authorized, any of the bonds of the United States now available in the Treasury of the United States under the act of August 5, 1909, the act of February 4, 1910, and the act of March 2, 1911, relating to the issue of bonds for the construction of the Panama Canal, to a total amount not to exceed $20,000,000: *Provided*, That any Panama Canal bonds issued and sold or used under the provisions of this section may be made payable at such time after issue as the Secretary of the Treasury, in his discretion, may deem advisable, and fix, instead of 50 years after date of issue, as in said act of August 5, 1909, not exceeding 50 years."

And also the so-called Leasing Act of July 28, 1892, which was passed by the Fifty-second Congress, first session, as follows:

"CHAP. 316. An act authorizing the Secretary of War to lease public property in certain cases.

"*Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled*, That authority be, and is hereby, given to the Secretary of War, when in his discretaicn it will be for the public good, to lease, for a period not exceeding five years and revokable at any time, such property of the United States under his control as may not for the time be required for public use, and for the leasing of which there is no authority under existing law, and such leases shall be reported annually to Congress: *Provided*, That nothing in this act contained shall be held to apply to mineral or phosphate lands.

"Approved, July 28, 1892."

Now, Mr. Secretary, will you kindly proceed.

Secretary WEEKS. Mr. Chairman, I am a little embarrassed to know just exactly what the committee wants. I have analyzed the Ford offer in the statement which I sent to Congress. I can do it again if it is desirable, but, of course, it would take a very considerable amount of time. If the committee could ask me any questions it desires regarding any phase of the analysis or the offer, I think the committee would gain time and I would not unduly burden it by much repetition.

The CHAIRMAN. Of course, the committee felt that this whole matter was before us really for the first time, and I think it would be advisable for you to analyze the offer as best you can, and get the matter before us in that way.

Secretary WEEKS. Very well. Very soon after the 4th of March, people interested in the Muscle Shoals development came to me and asked if I would be willing to recommend an appropriation to complete the work there, meaning, presumably, I suppose, the Wilson Dam, although it was not so definitely stated. I replied that when a proposition was made which seemed to me to promise commercial results commensurate with the expenditures that would have to be made, I should consider it my duty to send that proposition to Congress.

On the 8th of July, the first offer came to Gen. Beach, who had been in negotiations with Mr. Ford, or his engineers. That is before you. There were necessarily some considerable delays, which I could refer in detail, if it were desirable. For example, the representative of a very large company informed me at the time that his company proposed to make an offer and asked me if I would delay taking action until they had prepared their offer. That delay covered something like six weeks, and, finally, the president of the company came to me and said they had decided not to make an offer; that they would have made one or would make one, if I had any power to act; not referring to me specifically in making that statement, but if any one had the power to act, but they did not want to make a competitive offer that might develop into a political controversy. I suppose they had reasons for coming to that conclusion.

Then matters developed from time to time. It was difficult for Mr. Ford to come to Washington. His engineers came more or less frequently. I had consultations with Gen. Beach, Gen. Taylor, and Secretary Hoover, who had come in at my request, being an engineer, and with Mr. Ford's two engineers. Various phases of the Ford offer were discussed, of course, at these meetings. I suggested at the beginning that there should be modifications in the offer; that it was not specific or definite enough in many respects; and, in a word, these negotiations continued until the latter part of November, when Mr. Ford did come to Washington. Unfortunately, I was sick in bed at the time, and it was not desirable for me to go into any matters just then, but I had Mr. Ford come to my house, after seeing Gen. Beach and Gen. Taylor and Mr. Hoover, and talking over the situation with them. Mr. Ford told me then that he intended to go down to Muscle Shoals. As I recall, he said he had only been there one day and he wanted to look it over again and was going to take Mr. Edison down with him and when he had made this inspection with Mr. Edison he would return to Washington and take the matter up with me. He did not return to Washington but sent his engineers. I make no criticism of Mr. Ford for that. We had another discussion, and the engineers finally made several rather specific statements, and I asked them if they had authority from Mr. Ford to make those statements. They said they had not. Then I said that I thought if we were going to make progress on this matter and reach any conclusion, which I was anxious to do, that they ought either to get written authority from Mr. Ford to represent him or that Mr. Ford should come here himself. The result was that Mr. Ford came himself on whatever day is stated in this review, early in January.

The CHAIRMAN. January 11.

Secretary WEEKS. Yes. At that interview—and the members of the committee may have noted the statement which I made at the time, and which Mr. Ford made at the time—Mr. Ford practically dissented from many of the things which his engineers and I had talked over, and which I thought we were in comparative agreement upon, and it did not look as if we had made any progress toward a modification of his offer, except that at about that time he submitted a letter, or his engineers did, resulting from my attempt to get a guaranty from him that he would pay interest on the entire cost of the development and not leave a large amount of money that would have to be provided by Congress on which there would be no return, either in principal or in interest. He submitted the letter, which is in the record, which briefly states that he will pay 4 per cent on the entire additional cost of the completion of the dam after a lapse of six years.

Mr. Ford went away and his engineers went to him, and they did incorporate in his last offer not only this letter, but a good many other things that had been under discussion and somewhat in controversy, particularly relating to paragraphs 16, 17, 18, and 19 of the last offer, which I had insisted, as far as I could, should be done.

Evidently, Mr. Ford after he left my office changed his mind regarding the points in controverry, and put them in the offer, and that makes, in my opinion, a very marked change in the value of the offer from the standpoint of the Government and the people concerned. That is substantially the history of the matter, Mr. Chairman.

I have two propositions in my office, one of which is not completed, as I understand. They are quite different in terms but they should be brought to the attention of the committee so that the committee will have all the information. I have a verbal statement from another responsible company relating to the completion of Dam No. 2. That particular company would complete the dam at its own expense, furnishing the Government with such power as it needed for nitrate purposes, under terms which sound favorable. It is not in writing, and I simply mention it to indicate that others have been and are considering this proposition.

The main impetus to this whole matter is the belief on the part of a great number of people that they are going to obtain fertilizer at a lower cost than has heretofore obtained. I have no opinion to express on that subject because I do not know anything about the manufacture of fertilizer. I think Mr. Ford himself is rather groping in the dark on what the results of his enterprise may be. I judge that, not by what he has said to me. He stated that Mr. Edison thinks he can carry out the plans which he has in mind. If it were not for the possibility of the manufacture of fertilizer and the development of a large industry there, as would result from this offer being accepted, I think it is safe to say that as good an offer could be obtained to develop that proposition as Mr. Ford's. There would be no reason for building Dam No. 3, for example, for any other purpose than to carry out his proposed project.

Just what he intends to do with the power that is to be developed, I do not know. Incidentally, I did put a provision in my statement that the power should be disposed of, if sold, under the same conditions as the power of other companies, either under the direction of the Federal Water Power Board or the public service commission of Alabama, but except for the carrying out of his plans, at this time there would be no reason for the construction of Dam No. 3.

The CHAIRMAN. How much would it cost to construct that dam?

Secretary WEEKS. There are various estimates. I think probably the estimates vary from forty to fifty million dollars for the completion of both dams and equipping them. I have left a pretty wide latitude there. I think the engineers of the War Department, in order to be safe, have probably put the cost higher than it will be. It depends somewhat about Dam No. 3 on the foundations. The committee will understand that the rock in that section is very porous. It is difficult to be sure that you have got a firm, solid foundation. I think they are sure as far as the Wilson Dam is concerned. That foundation, and what has been done, looks as substantial as the Rock of Ages, but there was a development at what is known as Hale's Bar, on the Tennessee River, not far from there, where it was originally anticipated that $3,000,000 would be expended, and $11,000,000, as I recall, was expended before the dam was completed. There were caves and holes and all that sort of thing under the dam which had to be filled in at very great expense. The foundations of Dam No. 3 have not been as clearly determined as engineers would like before they say the final word, and that is one reason for the variation in the estimate for the construction of these dams. If there is no material fault in the foundations, my judgment is that these dams would be completed and equipped for between forty and forty-five million dollars. If there is material fault found there, which has to be corrected, I should think no one could say exactly how much it would cost. I am speaking, Mr. Chairman, as a layman now, rather familiar with the discussions that have taken place relating to the subject.

The CHAIRMAN. I think in Mr. Ford's offer he puts the probable cost at $42,000,000.

Secretary WEEKS. There have been contractors, who have tentatively looked over the proposition, and they can determine pretty definitely about the completion of the Wilson Dam, but there are no specifications drawn yet relating to Dam No. 3. I think I am right about that, Gen. Beach?

Gen. BEACH. Yes, sir.

Secretary WEEKS. So no man can make an estimate yet of what the cost will be. I think there is a pretty wide latitude there from forty to fifty million dollars, which would be pretty certain to cover the requirements.

The CHAIRMAN. The $42,000,000, as I recall, was for the completion of Dam No. 2.

Secretary WEEKS. Oh, you are mistaken. That would complete both dams. Incidentally, I think I am justified in saying that any delay that has taken place on account of the negotiations that have been going on has been entirely justified from the standpoint of probable cost. The estimates a year ago were substantially $10,000,000 higher than any one puts them to-day. The cost of construction has very materially declined, and I think it is safe to say that the delay of a year in the completion of that dam will save whoever furnishes the money to complete the whole project from five to ten million dollars at least.

The CHAIRMAN. Have you anything further to submit, Mr. Secretary?

Secretary WEEKS. I expressed a doubt, Mr. Chairman, a few minutes ago about the final results of the fertilizer development. Very largely the impetus for the completion of this project came from those who believed that they were going to get fertilizer at a lower cost.

Mr. Ford's modified offer in sections 17, 18 and 19, does give some assurance that a real attempt will be made to do this. I say "some assurance," a great deal of assurance. It will be noted in his first offer, to which I made strong objections he stated he was going to form a company or a corporation for the purpose of carrying out this general proposition. There was no statement made of the amount of capital with which that company should be equipped or anything relating to Mr. Ford's connection with it. It did not seem to me that that was a sufficient assurance that the work would be carried out, at least, during the life of the contract, and Mr. Ford has partially remedied that by providing that proceedings may be brought against him: that he and his estate, in other words, will back up this company. Now, just what those proceedings would amount to, in case he stopped manufacturing fertilizer, except a matter of damages against him or against the company which he forms, I am not very clear, and I have not submitted to the law department of the War Department any question on that subject. That is something that the committee may well take under consideration, but I did suggest that it seemed to me that there should be a forfeit in case of a failure to carry out that part of the agreement, because in my conversation with Mr. Ford I said to him, "Will you guarantee to continue to manufacture fertilizer during the life of this contract?" He replied that he would not. I said, "Will you agree to invest a certain definite amount of money in the manufacture of this fertilizer," and he said he would not. Now, of course, he does, in effect.

I said then, in effect, "You might stop the manufacture of fertilizer in five years or in any other time to the great disappointment of the people down there," and he said, "Of course, I am going to stop if I can not manufacture it profitably."

Now, that being the case and that idea being apparently in his head, it seems to me there should be some kind of forfeiture in case he fails to carry out this part of the agreement relating to the manufacture of fertilizer.

Mr. Ford is getting on in years. He is not going to be here many years, and no one knows what form his estate will be left in, and I think there should be a suitable guaranty that that part of this agreement is to be carried out in good faith by his successors without the necessity of bringing suit for damages.

Mr. GARRETT. Do you have in mind any amount of liquidated damages?

Secretary WEEKS. You mean in that case?

Mr. GARRETT. Yes, sir.

Secretary WEEKS. That would depend altogether on the benefits that are going to be obtained from the fertilizer and the price at which he is going to be able to furnish fertilizer to the people in that region. I know that frequently we hear the producers of fertilizer referred to as the fertilizer trust. I think there are two large companies and many smaller ones producing fertilizer in the United States, and this is interesting: One is the Virginia-Carolina Chemical Co. and the other is the American Agricultural Chemical Co.

The latter company was organized about 20 years ago, made up of various companies that had been operating independently, on a basis of giving to every stockholder a share of preferred stock and a half share of common stock for $100. The share of preferred stock is now selling at $57 a share and the share of common stock at $34 a share, so that the selling price of what the people 20 years ago paid $100 a share for is now $74 a share, and the company has never paid over 6 per cent on its preferred stock and only paid dividends on its common stock three or four years. Seven per cent on the actual money paid in would cover the total dividends annually on the stock of that company, and yet 20 years afterwards its stock is selling at three-fourths of the price of which it was originally sold to the public. This would indicate that the profits have not been excessive; and that leads me to conclude that there may be some doubt about whether fertilizer can be manufactured by different methods which will show a profit, and whether it can be manufactured at a profit under some experimental methods has a bearing on Mr. Ford's statement about not continuing to manufacture.

The CHAIRMAN. When did Mr. Ford make that statement to you that he would discontinue manufacturing fertilizer if it was not carried on profitably?

Secretary WEEKS. That was at the interview on the 11th of January. I think you reminded me of the date. That is the only time I have ever had any considerable discussion with Mr. Ford personally.

The CHAIRMAN. That interview took place, as I take it from what you have said, about two weeks before he signed this second agreement which is now before us.

Secretary WEEKS. Yes.

The CHAIRMAN. You have had no interview with him between the time he told you what he did and the time he sent you that signed agreement?

Secretary WEEKS. Not with him personally. His engineers remained in Washington and assisted the Judge Advocate General's Department in preparing the new agreement or the new offer of Mr. Ford in the form of a contract. His letter relating to paying 4 per cent on the additional cost of completing the construction had to be incorporated in his original agreement, and that, and the other things to which I have referred in those paragraphs at the end of the offer, which are substantially new, were all agreed to by his engineers with our Judge Advocate General's Department. One of them then took the statement to Mr. Ford in Detroit and he signed it and sent it back by the same messenger.

The CHAIRMAN. Would you like us to begin asking you questions now?

Secretary WEEKS. I think that is the best method to get at the information which the committee wishes, Mr. Chairman. I could talk about this a long time.

The CHAIRMAN. I notice at the end of your statement sent to the Speaker of the House you make some references to apparent omissions on the part of Mr. Ford in connection with his second agreement. On page 10 you say:

"I also suggest that the cost of acquiring the lands and the flowage rights necessary for Dam No. 3 should be included in the cost on which Mr. Ford is to pay 4 per cent interest."

Secretary WEEKS. That is a matter of figures, Mr. Chairman. Of course, that one item is much more important in this whole transaction than the amortization which he proposes to make for the payment of the principal at maturity; probably twice as important in the matter of dollars and cents. Our engineers estimate that it will be likely to cost $2,000,000 to obtain the land and flowage rights which would be affected by the construction of Dam No. 3. That figure may be high. Mr. Ford's engineers placed it lower. I do not believe any one knows exactly, because I do not think they have gone into it in sufficient detail, but Mr. Ford's engineers express the view that it would not be over $1,500,000; but anybody can take his pencil and figure what $1,500,000 paid at this time would amount to in 100 years, and it will be found, of course, that that is of very great moment compared with the fund proposed to be established to amortize this debt, and that was my reason for saying that I thought that amount should be included in the cost of the enterprise. It is a part of the cost of the enterprise.

The CHAIRMAN. As I understand the proposition, Mr. Ford makes an offer to lease a certain part of the plant, and then he wants certain other parts of the plant sold to him outright; that is, the nitrate plants 1 and 2, and the Waco quarry, and also the Warrior River plant and the transmission line. He wants that sold to him outright.

Secretary WEEKS. Yes.

The CHAIRMAN. And he wants to lease the Wilson Dam and also Dam No. 3 when it is completed.

Secretary WEEKS. Yes.

The CHAIRMAN. You make some comment in your letter about the sale of those nitrate plants. What was the original cost to the Government of those plants?

Secretary WEEKS. About $87,000,000.

The CHAIRMAN. And he wants to buy them outright for $5,000,000.

Secretary WEEKS. That is his offer.

The CHAIRMAN. I presume we had better take up those matters in detail with the Chief of Ordnance, when we come to that.

Secretary WEEKS. Mr. Chairman, in order that I may make clear that statement, Congresssman Quin calls my attention to the fact that perhaps I did not answer the question correctly. I understood you to ask me about the cost of nitrate plants Nos. 1 and 2, the Warrior plant, the Waco quarry, and the transmission line.

The CHAIRMAN. Yes.

Secretary WEEKS. And I stated about $87,000,000. I have said in my statement to the committee here $85,000,000, and that is probably nearer correct than $87,000,000, but that does not include what has been expended in the construction of the Wilson Dam which is between sixteen and seventeen million dollars.

The CHAIRMAN. Of course, the Wilson Dam is not yet completed. You say in your letter that it is about 30 per cent completed and it will require, according to the Army engineers, to build and complete the Wilson Dam and also Dam No. 3, about $50,000,000.

Secretary WEEKS. Yes. The cost of what has been done at the Wilson Dam, of course, is very much higher than the same cost would be at this time. I do not know about the 30 per cent. I am not very clear in my own mind about that.

The CHAIRMAN. I think your report states that it is about 30 per cent completed.

Secretary WEEKS. I think the Wilson Dam could be completed for $22,000,000, which would make a total of about $39,000,000 for that dam, but if it were constructed at this time I think it could be constructed for $30,000,000, and bear in mind, Mr. Chairman and gentlemen, that I am talking as a layman about these figures and engineering propositions, because I am not an engineer; but this is stated after considerable familiarity with the discussions that have been held in my presence by engineers representing both sides of the matter.

The CHAIRMAN. Have you with you, Mr. Secretary, an itemized cost account stating just exactly how much money has been expended by the Government up to the present time on all these projects?

Secretary WEEKS. I have an itemized statement, and it was included in what was marked "Exhibit F" in the report which I sent to Congress, on page 23, of the cost of the nitrate plant and everything, I think, except the Wilson Dam. That is the engineers' statement.

The CHAIRMAN. In Exhibit F, on page 21 of the pamphlet, there is a statement of the approximate cost of the nitrate plant, of the Warrior River plant, the Waco quarry, and so on.

Secretary WEEKS. If you will turn to page 23, you will find what are supposed to be the accurate costs of those nitrate plants and the Warrior-Sheffield power station and transmission line.

The CHAIRMAN. Will you kindly state for the record just what that would amount to?

Secretary WEEKS. Mr. Chairman, not including maintenance, the total cost is $85,423,078.23.

The CHAIRMAN. For nitrate plant No. 1——

Secretary WEEKS (interposing). That includes the properties that Mr. Ford proposes to buy.

The CHAIRMAN. Mr. Ford proposes to lease the Wilson Dam and also Dam No. 3, which has not even been begun.

Secretary WEEKS. Yes; that is what he proposes to lease; the two dams, electrically equipped, of course.

The CHAIRMAN. And what have they cost the Government up to the present time?

Secretary WEEKS. $16,251,000.

The CHAIRMAN. For the two dams?

Secretary WEEKS. Nothing has been done on Dam No. 3.

The CHAIRMAN. Nothing has been done on that property at all?

Secretary WEEKS. There may have been some exploration work and the Chief of Engineers is here and can inform you about that when he testifies.

The CHAIRMAN. What is it estimated it will cost to complete Dam No. 3.

Secretary WEEKS. I have explained, Mr. Chairman, that that is one of the indefinite matters connected with this enterprise. If they find a relatively good foundation, I should think it would cost not far from $20,000,000. If the foundation is a difficult one, it may cost much more.

The CHAIRMAN. You make a recommendation that a lease of 100 years would be, in your opinion, a little too long, and you suggest possibly a 50-year lease. Why do you make that recommendation?

Secretary WEEKS. Mr. Chairman, I think that is a better public policy. It is the policy that has been adopted in the passage of the water power legislation. One hundred years is a long time. All kinds of things may develop and change in that time, and I do not think, on the whole, it is good public policy to make as long a lease as that. It may be varied from, in some instance, and Congress may decide that it is wise to do it, but I would very much prefer to make a lease of 50 years.

The CHAIRMAN. What suggestion do you make with reference to Dam No. 3, or to any work to be done on Dam No. 3, if the committee should not wish to take up Mr. Ford's proposition.

Secretary WEEKS. I do not think the local conditions at this time, for any other reason than Mr. Ford's project which he may have in mind, would justify the building of Dam No. 3. As I state in my report, I think they do justify the completion of Dam No. 2, and that would be my recommendation.

The CHAIRMAN. Upon what terms does Mr. Ford propose to lease Dams Nos. 2 and 3?

Secretary WEEKS. They are stated very clearly in his proposal.

The CHAIRMAN. Now, Mr. Secretary, we will begin to take up such matters as the other members of the committee may desire to ask you about. Mr. McKenzie will ask the questions that he desires to ask you.

Mr. MCKENZIE. Mr. Secretary, I will be very brief. If we should adopt your suggestion to change this plan from a 100-year term to a 50-year franchise, it would simply be a refusal to accept the offer made by Mr. Ford and would necessitate the submission of an entirely new proposition, would it not?

Secretary WEEKS. It would unless Mr. Ford agreed to it.

Mr. MCKENZIE. In case Mr. Ford should agree to a 50-year franchise, he undoubtedly would want different conditions contained in the contract from those in the proposal he has made here for a 100-year franchise.

Secretary WEEKS. He would want to change his method of amortizing the debt, of course, basing it on 50 years instead of 100 years, but I do not think it would make any material difference otherwise. You must remember, Mr. McKenzie, that I have been dealing with Mr. Ford in this very considerable transaction, he having the knowledge as well as myself that I had no power to complete anything or to conclude anything, and unless Congress gives somebody the power to do it or does it itself, no changes can be brought about such as could be made in a negotiation which two individuals would enter into if they were considering such a proposition.

Mr. MCKENZIE. If it were based on a 50-year franchise, that would proportionately increase the expense to Mr. Ford for the benefit he would derive from the proposition.

Secretary WEEKS. He would amortize the indebtedness so that the annual expense would not be any greater. but it would not be entirely paid at the end of 50 years.

Mr. McKENZIE. Of course, it is true as you suggested, that the waterpower legislation provides for a 50-year term franchise?

Secretary WEEKS. Yes.

Mr. McKENZIE. That was a controverted question, was it not?

Secretary WEEKS. I think it was.

Mr. McKENZIE. There are very many who hold the view that a long-term franchise is advantageous not only to the licenses, but also to the general public; is that not true?

Secretary WEEKS. Yes. I am simply expressing my own personal view in the matter.

Mr. McKENZIE. However, if the committee should object to the 100-year proposition, as one element in the plan, it would necessarily involve the redrafting of the whole proposition, would it not?

Secretary WEEKS. I do not think there would be any material redrafting. There would have to be a redrafting of the amortization plan.

Mr. McKENZIE. In regard to your suggestion that if this plan should go through there should be some provision put in which would make Mr. Ford's company liable under the State laws of Alabama, or that might bring him under the general waterpower law of the country, is it your view that there is not an implied understanding that he would come under those laws, regardless of any specific reference to it in the contract?

Secretary WEEKS. I do not know whether he would be or not. That was discussed, and there was some little doubt about it. There is no reason why it should not be put in, if there would not be any certainty about it.

Mr. McKENZIE. So far as you know, neither Mr. Ford nor his representatives have any objection to that sort of a provision going in?

Secretary WEEKS. I think they would not have.

Mr. McKENZIE. Now, Mr. Secretary, in regard to the amount to be paid by Mr. Ford for the property he is to take, that is, his offer of some $5,000,000, as set forth in the contract, is it your judgment that that offer was based on what he considered a fair salvage value for the property, if taken over, simply as a matter of salvage, or was the figure of $5,000,000 put in as a part of the consideration of the whole scheme? In other words, if there were no other conditions connected with this matter, would it not be reasonable to presume he might have made a greater offer to take that property over as a mere matter of salvage?

Secretary WEEKS. I can not tell what course of reasoning Mr. Ford and his engineers followed to arrive at the $5,000,000 figure, but they have refused in any way to modify it.

Mr. McKENZIE. I notice by your letter and the report of the engineers that the maximum sum that can be expected to be received from the sale of this property would be $16,000,000?

Secretary WEEKS. A little in excess of $16,000,000.

Mr. McKENZIE. And that you think a fair estimate would be $8,000,000?

Secretary WEEKS. The $8,000,000 is based entirely on scrapping and salvaging the property, and the War Department has done so much of that kind of thing that its estimates are fairly accurate as to what can be obtained by scrapping.

Mr. McKENZIE. It has occurred to me, Mr. Secretary, that the minds of Mr. Ford and the Army engineers did not meet on the point of the salvage value in its entirety, that Mr. Ford took into consideration other elements in connection with the whole proposition and simply said that among other things he would give $5,000,000 for this personal property.

Secretary WEEKS. I can not tell about that. Of course, there has been a great deal of discussion about this matter. Mr. Ford originally proposed to pay 6 per cent on $20,000,000 as the amount he was willing to provide for the completion of the dams. That matter was discussed for a long time, and his engineers repeatedly said to me that Mr. Ford could not afford to do any more than that because he was going to put ten or twelve million dollars into a plant for the manufacture of fertilizer, and that would prohibit his paying interest on any more of the cost of construction and make the proposition a reasonable one from a commercial basis. That would seem to indicate that they had considered all parts of this offer. Of course, Mr. Ford has modified the matter of the payment of interest on the cost of construction.

Mr. McKENZIE. I take it from your statement, Mr. Secretary, that you have some apprehension as to whether or not Mr. Ford or his company would continue the manufacture of fertilizer at this plant through the whole period of the lease.

Secretary WEEKS. If I were operating for myself and this were my property, I should insist on a guaranty that the manufacture should continue during the life of the contract, and I say that without any reflection whatever on Mr. Ford or Mr. Ford's estate, or on the company he is going to form. That is simply a common-sense business proposition.

Mr. McKENZIE. I am not sure but what you are right about that, Mr. Secretary, because there is no question whatever but that the interest of the people of this country has been centered around the fertilizer proposition at this particular place. But I take it from your statement, further, that the manufacture of fertilizer has not been a great financial success, up to date, in this country.

Secretary WEEKS. I do not want to say that finally in any specific case, because I do not know.

Mr. McKENZIE. Speaking of the two large companies——

Secretary WEEKS (interposing). I just happened, last night, in glancing through a stock-exchange list in the newspaper, to let my eye fall on the American Agricultural Chemical Co. stock, and that was the reason I gave you that illustration. I had no thought of doing it before; it was a mere matter of chance.

Mr. McKENZIE. That being true, it argues further the hazardous undertaking of the Government attempting to manufacture fertilizer at this point or any other point.

Secretary WEEKS. I am opposed to the Government doing it under any circumstances, engaging in the manufacture of fertilizer or incidentally entering into any other business in competition with its citizens.

Mr. McKENZIE. You have included in your letter comments of the officers in the Judge Advocate General's Department relative to certain propositions affecting this proposition.

Secretary WEEKS. Yes.

Mr. McKENZIE. Is it your understanding that the claims of the Alabama Power Co. are without foundation in law?

Secretary WEEKS. That seems to be the opinion of the Judge Advocate General's Department. That contract was entered into by the contract section of the War Department during the war, and they agreed to the option. The officers of the Judge Advocate General's Department say that the contract section had no right to do hat. Assuming that that is true, I think the committee and Congress may properly consider whether or not a moral right in equity exists. I, personally, do not like to see the Government enter into any contract through its authorized agents which is not carried out. It should not cut sharp corners under any circumstances.

Mr. McKENZIE. Are the representatives of the Judge Advocate General's Department here this morning?

Secretary WEEKS. Yes. Col. Hull, the Acting Judge Advocate General, is here.

Mr. McKENZIE. We will take that up with them. I was interested in having a statement from you, in view of the fact that you had mentioned it in your letter.

Secretary WEEKS. I was very much surprised when I received that decision.

Mr. McKENZIE. In your consideration of the matter with Mr. Ford, it is evident from the contract that he did not ask any guarantee from the Government as protection against the claims of these two companies, the American Cyanamid Co. and the Alabama Power Co.?

Secretary WEEKS. Undoubtedly he expects the Government is going to furnish him with a clear title to the properties which he is buying.

Mr. McKENZIE. I notice further in your letter you recommend the completion of the Wilson Dam, whether or not we accept Mr. Ford's offer?

Secretary WEEKS. Yes. That really has nothing to do with Mr. Ford's proposition, but I wanted to express the opinion that I believed that the development of that region and the requirements for power, considering the present condition of the dam, warrants its completion by the Government. I have not very much doubt, although I can not say this with certainty, that the Government could complete that dam without taking a dollar from the Treasury, issuing bonds that could be sold, based on the dam, and the sale of the water power that could be contracted for. And, while I say I have not any proposition that shows that definitely, I believe that could be done. That region needs, or is going to need very soon, additional power, and there is the possibility for it, and it should be used. You may understand that we are now leasing the power plant at nitrate plant No. 2 to the Alabama Power Co., and in effect that power reaches the mills of North Carolina. I had to make that lease while these negotiations were on rather against the protest of at least one of Mr. Ford's engineers. Mr. Ford himself, personally, did not object, however, because there was a shortage of power in North and South Carolina, and that was the only available place to get power. So that power plant was started, and power is so diverted that in the final analysis the power generated at that plant reaches the mills of North and South Carolina. I did that after I had a careful investigation made by officers of the Ordnance Department as to whether the shortage of power really existed, and it did exist. There was no other place to obtain it, and people would have been thrown out of employment if that had not been done.

Mr. McKENZIE. How far can power be transmitted?

Secretary WEEKS. You will have to ask one of the officers about that; I do not know. I do not mean to say that power is now being transmitted from Alabama to North Carolina. It is being diverted so that it reaches North Carolina. What I mean to say is that it has a specific application to this 100-year lease—in that nobody knows what we are going to see in 10 or 20 years in the transmission of power. It is in its infancy. We can develop perfectly enormous power in the Colorado River. The greatest power in the United States, far and away, is there, and I anticipate that in the course of a comparatively few years there will be means of transmission of power to the Central West, anyway, and perhaps to the whole country.

Mr. MCKENZIE. It is being transmitted now as far as 200 miles, is it not?

Secretary WEEKS. More than that. I am reminded that it is being transmitted 700 miles in California. I am not personally familiar with that.

Mr. MCKENZIE. At any rate, if this proposition is turned down by the committee, you would recommend the completion of this dam for power purposes, and in that event possibly all of these improvements would be salvaged and dismantled.

Secretary WEEKS. Would be salvaged. I suppose members of the committee have been there. There are two villages there, one at nitrate plant No. 1, the Sheffield plant, and one in Florence. There are 400 or 500 houses at those plants, and most of them are not occupied. A few of them are occupied by our officers and men who are there. Those houses are of stucco construction, reinforced concrete, or whatever it may be.. I went into one of them, and there is not one of them that is not suitable for any man to live in unless he has a family which is too large. If there is any development of commercial enterprise there, those houses are coming into the market, and while the estimate of their salvage value is very small now, I have no doubt those houses cost $3,000 or $3,500, and that they would cost $2,500 each now, on an average, and you could get quite a large salvage value out of them.

Mr. MCKENZIE. But this much can be said in favor of this proposition, perhaps, that Mr. Ford agrees to take over all that property for the sum of $5,000,000, and that he will continue to operate the nitrate plant from which we expect to get the material to make explosives.

Secretary WEEKS. He will keep the nitrate plant in condition for the Government's use, and that is favorable from the standpoint of the War Department.

Mr. MCKENZIE. He further agrees to undertake the manufacture of fertilizer to the maximum amount of 110,000 tons per annum?

Secretary WEEKS. He does now, yes.

Mr. MCKENZIE. To that extent he is taking on a pretty good-sized contract on his part?

Secretary WEEKS. Undoubtedly.

Mr. GREENE. Mr. Secretary, if this offer were declined, considering your suggestion that the completion of the Wilson Dam be carried through, would it be done with the idea of maintaining it as a Government enterprise, or simply preparing it to get it into shape for salvage?

Secretary WEEKS. I think the whole thing could be leased and in time probably salvaged, but that is simply an expression of opinion on my part.

Mr. GREENE. Then, so far as I understand it, this whole business is looked upon primarily as a proposition for salvage, and that the question as between one, two, or three or any different forms of salvage which may be offered is simply which form carries with it the greatest operating benefits and the best financial terms?

Secretary WEEKS. Yes.

Mr. GREENE. Salvage is the motive in the whole proposition?

Secretary WEEKS. The motive is to get the Government out of an enterprise in which it is involved as a result of the war.

Mr. GREENE. Are you prepared to give us anything like an opinion for the record as to whether, if this particular form of Mr. Ford's offer should be declined, that would terminate all negotiations with him, or whether he might be likely to come back with a second proposition?

Secretary WEEKS. I am not justified in speaking for Mr. Ford in that matter, but as I tried to explain awhile ago, I have taken the position that unless something were done we would not make a trade. My position was to get the best offer possible from Mr. Ford or someone else and send it to Congress.

Mr. GREENE. I appreciate that, and I did not mean to ask the question to put you into the attitude of expressing Mr. Ford's mind. I wondered whether the negotiations were attended with such circumstances as might lead to the reasonably presumable assumption that he would come in with another offer.

Secretary WEEKS. I do not know that he would come in with another offer, but he might make some changes in this offer.

Mr. HULL. You were speaking of scrapping, when you had estimates made in connection with nitrate plant No. 2. You would not recommend that, would you?

Secretary WEEKS. I would not; no. That refers entirely to No. 2.

Mr. HULL. Yes; I am glad to hear you say that. In Mr. Ford's offer he speaks of a profit of 8 per cent on the fertilizer, and any estimates made as to his offer would include the 8 per cent?

Secretary WEEKS. We had some difficulty in reaching a conclusion, but the final conclusion was that it was 8 per cent on the turnover.

Mr. HULL. That would be rather excessive, would it not?

Secretary WEEKS. I would not want to go into the manufacturing business unless I thought I could make relatively 8 per cent.

Mr. HULL. We found it very excessive in the war, in connection with these cost-plus contracts, did we not?

Secretary WEEKS. This is not a cost-plus contract.

Mr. HULL. It is 8 per cent on the turnover, even if he turns it over two or three times.

Secretary WEEKS. I am talking about the turnover of the product, Mr. Hull. If he sold $100,000,000 worth of fertilizer his excess profit would be $8,000,000.

Mr. HULL. That would all depend on the number of times he could turn it over in a year?

Secretary WEEKS. Yes.

Mr. HULL. If it took him a year for one turn over, 8 per cent would not be excessive, but if it turned over four or five times it would be very excessive; is that not true, Mr. Secretary?

Secretary WEEKS. I think in the case of fertilizer manufacturing the turnover is about once a year. You will note that in Mr. Ford's offer he says:

"In order that the farmers may be supplied with fertilizers at fair prices and without excessive profits, the company agrees that the maximum net profit which it shall make in the manufacture and sale of fertilizer products at nitrate plant No. 2 shall not exceed 8 per cent of the actual annual cost of production thereof.

Mr. HULL. That is another thing; that is 8 per cent——

Secretary WEEKS. That is the production of fertilizer.

Mr. HULL. You spoke of the financial responsibility; or what was back of the offer of Mr. Ford. Would it not be better to have incorporated in one of his offers the amount of the paid-up capital stock of the company he is going to operate? That is very indefinite. He simply says he is going to form a company; he does not know anything about how much paid-up capital the company is to have. Should it not have some paid-up capital?

Secretary WEEKS. You have noted in his original offer he simply said that this operation would be conducted by a company or corporation to be formed.

Mr. HULL. I think that was in the second one, too.

Secretary WEEKS. Yes; but now he goes on to say that he would combine the two companies. I think that is referred to in paragraph 18. In any case the first offer in that regard was so indefinite and undesirable from a business standpoint, that that is one of the things I have been pushing to have corrected. Either the company should have a capital sufficient to insure that this will be done, or there should be some sort of a guarantee to provide for the result of failing to do it; not that Mr. Ford is not personally responsible, or his estate, probably, but a suit for damages in case there were failure to carry this project out after Mr. Ford is gone, might bring very unsatisfactory results.

Mr. HULL. That is the very point I wanted to make. I wanted to know if it would not be better, if we are going to accept the proposition, to know how much paid-up capital is behind the company he is going to operate?

Secretary WEEKS. I think that would be a wise step. But I think in view of Mr. Ford's engineers' suggestion that he expected to invest ten or twelve million dollars in the manufacture of fertilizer that might be considered their opinion of his idea of the capital of this company.

Mr. HULL. That might be a subsidiary company not operating the dams at all.

Secretary WEEKS. I think his company is to carry out the entire operation; I think it is intended that it should do that.

Mr. HULL. That might be true, or it might not be.

Secretary WEEKS. I do not know about that.

Mr. HULL. You spoke of the manufacture of fertilizer not being profitable.

Secretary WEEKS. I wish you would not put it in that way.

Mr. HULL. I am not trying to put something in your mouth you did not say; I just refer to that. Two of these companies you cited——

Secretary WEEKS (interposing). One company I cited.

Mr. HULL. Yes; I believe you cited only one company; but that company does not manufacture nitrates, it simply assembles the nitrates it buys of the importers; is that not true?

Secretary WEEKS. Undoubtedly.

Mr. HULL. This is an entirely different proposition. This is evidently for the manufacture of the nitrates which would take the place of the Chilean nitrates, which are imported.

Secretary WEEKS. We can fix nitrogen, however, at that plant, without any question. I want to offer this opinion, however, that the fixation of nitrogen is in its infancy, and that ten or twenty years from now we will be surprised at the development which has been made. If you will ask Gen. Williams the question he will tell you about observations he has made recently along that line which would substantiate the general statement I made in that regard.

Mr. HULL. I think that is true; but my point was that in the manufacture of nitrates this company which you cite probably has to pay $90, $100, or more per ton for its nitrates.

Secretary WEEKS. About $40, I think.

Mr. HULL. During the war they paid $90.

Secretary WEEKS. It is about $40 now.

Mr. JAMES. Section 11, Mr. Secretary, enumerates the things that Mr. Ford is willing to buy, and which cost us $85,000,000. You figure the salvage value at $8,000,000 and you say that possibly they might sell for as much as $16,000,000. Under section 12 Mr. Ford agrees to pay $5,000,000. I understand that you feel that in view of Mr. Ford's offer to manufacture nitrates and fertilizer, Congress should accept the proposition, although there is quite a difference between your figures and his?

Secretary WEEKS. I think the Government is making a sacrifice in selling at $5,000,000. I tried to get Mr. Ford to pay the salvage value on the property. He has declined to make any change in the amount he will pay for it. There are so many contingencies and benefits that result from this that it is a question for Congress to decide whether it can afford to make a monetary sacrifice in the sale of its property, but in any case you should remember that the salvage includes the salvage of nitrate plant No. 2, which I would not be in favor of doing at all. There the Government has a complete plant which can now produce, by using steam power, without any development of waterpower, about 100,000 tons of ammonium nitrate a year.

Mr. JAMES. What would be the salvage value without the nitrate plant?

Secretary WEEKS. Those figures are given in detail in Gen. Williams's report. Let me add a word here, so that it may clarify the statement I have made. The Government is now equipped to produce nitrates for its purposes through the use of this nitrate plant No. 2. Under present conditions it would have to operate the plant by steam power, which, of course, would be more expensive, presumably, than to operate by waterpower, and there is an advantage in that the steam plant is kept in condition all the time, so that regardless of Mr. Ford's or any other offer the Government has that property now and can produce in any year it wishes to, 100,000 tons of ammonium nitrate.

Mr. KEARNS. Mr. Secretary, I think the answers to all the questions I would like to ask you are in this document we have before us, but in order to assemble them, I would like to ask you a few questions. How much money has the Government already expended in the entire project at Muscle Shoals?

Secretary WEEKS. Including maintenance?

Mr. KEARNS. I mean including everything.

Secretary WEEKS. You want that figure definitely?

Mr. KEARNS. Approximately.

Secretary WEEKS. That amount is $106,203,016.07. That includes maintenance to July 1, 1921. Incidentally, I want to say a great many statements have been made about the cost of carrying on those plants now, as being $700,000 a year, or figures to that effect. That has been modified in the last year, we having leased the Warrior plant and the power plant No. 2, and my opinion is that we are getting enough out of those two leases to pay the expenses we are going to be put to there so that we are probably breaking even at this time.

Mr. KEARNS. If the Government should enter into this contract or lease with Mr. Ford, and should complete this project, how much would the additional cost amount to?

Secretary WEEKS. It would be from $40,000,000 to $50,000,000 more. That would make a total of approximately $150,000,000.

Mr. KEARNS. After the work was all completed, on what sum of money would Mr. Ford pay rental?

Mr. WEEKS. On whatever the additional cost of completing Dams No. 2 and No. 3 may be, and the equipment of those dams.

Mr. KEARNS. Then the Government would get no rental from the money already expended down there?

Secretary WEEKS. No, sir.

Mr. KEARNS. Does Mr. Ford propose to finance the completion of this entire project down there?

Secretary WEEKS. He expects to contract to construct the dams, and the Government to furnish the money to do it, and the terms on which the interest payments are to be made are stated clearly in his offer.

Mr. KEARNS. If the Government should enter into this lease with Mr. Ford and he should undertake to produce fertilizers and should fail, what would become of the plant?

Secretary WEEKS. He makes the offer for the whole or nothing. I asked him if he failed to manufacture fertilizer if that would mean—I asked in various terms—if that would mean the cancellation of the balance of the contract, that is, relating to the power obtained from the dams, and he said not at all, that his offer included everything, and that he did not expect, at that time, to manufacture fertilizer unless he could do it at a profit, but his modified offer does modify that statement.

Mr. KEARNS. If this lease should be granted to him, there is no assurance then that he would continue the manufacture of fertilizer throughout the term of the lease, that is, there is no proposition on his part that he shall give bond or any kind of a guaranty to that effect?

Secretary WEEKS. No; he apparently attempts to put himself and his estate behind the company which he forms.

Mr. KEARNS. But not agreeing to manufacture fertilizer throughout all of the lease period?

Secretary WEEKS. I do not think it is quite in businesslike shape in that respect.

Mr. KEARNS. In connection with the manufacture of fertilizer he intends to furnish power to certain corporations and individuals in that section of the country, does he not?

Secretary WEEKS. I do not know. That is entering into a question which is problematical. I have been told he intends to establish industries there that would make use of the power later. He might have some power to sell, and that is the reason why I put in the proposition that if it were sold it should be sold under the direction of the Federal Waterpower Commission.

Mr. KEARNS. Under the terms of the lease as submitted by Mr. Ford, he would have a right to furnish power to any one to whom he saw fit to furnish it?

Secretary WEEKS. Undoubtedly.

Mr. KEARNS. He would have the right to cease the manufacture of fertilizer the moment he might see fit?

Secretary WEEKS. That is clearly stated, I think, in paragraph 14 of the Ford offer.

Mr. KEARNS. In your opinion, would he be required under the provisions of the agreement to produce fertilizer during the life of the lease?

Secretary WEEKS. If you will look at page 10 of my comment, in the second paragraph you will see that I say, "If Mr. Ford's proposal be accepted by Congress, I suggest that there should be certain modifications made to safeguard the Government's interests. As heretofore stated there should be some assurance that the contracts made by his proposed company will be carried out."

Mr. KEARNS. What guarantee could he give that would live through the period of 100 years, or the life of this company, for the manufacturer of fertilizer?

Secretary WEEKS. He could provide the company with sufficient capital so that its failure to do so would mean a large financial loss, or he could give a bond.

Mr. KEARNS. The Alabama Power Co. claims to have had some option granted by the Government on the rental of this project. What amount of money, if any, did they pay the Government for this option?

Secretary WEEKS. You mean the Alabama Power Co.?

Mr. KEARNS. Yes.

Secretary WEEKS. I have a letter here dated the 28th of May, 1921, from the president of the Alabama Power to Gen. Beach, the Chief of Engineers, which gives the full history of this company's connection with that project. They have spent a good deal of money there in the preliminary operations, and I do not think it would be unreasonable, Mr. Chairman, to ask that this letter be put into the record.

Mr. KEARNS. I think it ought to be in the record. Do they claim they received this option?

The CHAIRMAN. If there is no objection, the letter referred to by the Secretary will be inserted in the record at this point.

(The letter referred to is as follows:)

ALABAMA POWER CO.,
Birmingham, Ala., May 28, 1921.

Maj. Gen. LANSING H. BEACH,
Chief of Engineers, Washington, D. C.

DEAR SIR: We duly received your communication of April 2, 1921, inquiring what arrangements can be made to derive a reasonable return upon the investment if the Government completes the dam and hydraulic power plant at Muscle Shoals, Tennessee River, and you invite a discussion of the matter if we are interested.

We have given the subject of your letter careful consideration since its receipt and wish to make a reply as follows:

1. The site at which the dam is being constructed on the Tennessee River was purchased by our company in 1906, and from that time until 1919, a period of 12 years, we expended large sums of money in making studies, exploring foundations, and in the purchase of reservoir lands, with the view of its development as an integral part of the hydroelectric system which would be required to meet the needs of the communities which the company proposed to serve from time to time. It was our plan to construct storage reservoirs and to connect them with the proposed Muscle Shoals development to make up the deficiency in power at the latter place during seasons of low water. This fact alone would have enabled this company to plan for an ultimate installation at Muscle Shoals largely in excess of the installation that should be made as an independent, separate development. In short, our plans were adapted to fully conserve and utilize in the public interest the navigation and water resources of the region.

2. In the meanwhile we acquired other power sites in Alabama, and under an act of Congress of 1907 constructed a dam and power plant on the Coosa River, a smaller hydro plant on a nonnavigable stream, and several steam plants at different points on our system, with a total capacity of 177,400 horsepower (not including the Government steam plant at Warrior). This system embraces about 1,500 miles of high-tension lines over which we are distributing energy to the public in more than two-thirds of Alabama, including one of the greatest industrial and mining districts in the country.

3. During the same period engineers of the United States were investigating the project pursuant to the direction of Congress. A special board of engineers was created for the purpose of obtaining information and estimates relative to the coordination of proposed improvements for navigation and water power, and that board invited bids for cooperation by water-power interests in the proposed development. This compnay, through its subsidiary, Muscle Shoals Hydroelectric Power Co., submitted a plan in response to that invitation of the United States engineers. Plans were also submitted by others, but upon careful investigation the special board recommended that Congress undertake the improvements in cooperation with this company, and that recommendation was concurred in by the Board of Engineers for Rivers and Harbors and by the Chief of Engineers. Believing that this was an economical and profitable undertaking, we were prepared under the conditions then existing to proceed with our share of this undertaking, and if this recommendation had been favorably acted upon, the project would have been available for the manufacture of nitrates during the war period, and many millions of dollars would have been saved.

4. A further examination and survey of the project was made by the engineers of the United States in compliance with the provisions of the River and Harbor Act approved March 4, 1915. Reccommendation was again made that the improvements be undertaken in cooperation with this company, but the engineers further recommended that action be suspended until it should be determined whether the Muscle Shoals power would be utilized for a nitrate plant under the act of Congress of June 3, 1916. (Doc. No. 1262, 64th Cong., 1st sess., 1916.)

5. We are adverting to these matters in order that you may see that we were for a number of years interested in working out a feasible plan for the development of the Muscle Shoals power for general industrial use on lines of coordination with improvements for navigation. However, in 1918–19, this particular site was selected for development by the United States to supply power for a nitrate plant; and as it seemed that the United States needed to go forward quickly in its war program to make provision for nitrates, we concluded, as the result of various conferences with representatives of the Government, to donate to the United States the dam site and other lands owned in fee by this company, leaving entirely to the Government the question of any plan for future cooperation with the United States. This donation was made and we received from the United States its voucher for the sum of $1, being the nominal consideration expressed in the deed. As you may recall, the donation was accepted in behalf of the United States by the Secretary of War under date of February 20, 1918, who expressed the thanks of the Government for the company's action in so donating the property. The property thus donated represented on our books a total investment by this company, to the time of the donation, of approximately $476,000, but we desired to be helpful to the Government in its war program and made the donation in that spirit. From that time until the receipt of your letter, we have taken no action with regard to the Muscle Shoals project other than the interest common to every patriotic citizen to encourage the progress and development of the Tennessee River Valley and the contiguous country.

6. We do not wish to suggest a course contrary to the expressed purpose of Congress that all of the Muscle Shoals power shall be used in the manufacture of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizer and other useful products. Practically all of the electrical power used in industrial and mining operations in Alabama is furnished by this company, in addition to which we supply the lighting and other municipal requirements in more than two-thirds of the State; and if in the wisdom of Congress all of the power at Muscle Shoals should be reserved for nitrate purposes, or applied to any other use considered to be of greater benefit than the public service rendered by this company, we will continue our program to develop other water powers as the public needs may require.

7. We therefore wish to mention the following difficulties in the way of making any suggestion at this time which will be of substantial assistance to the Government in dealing with its problem at Muscle Shoals:

(*a*) Section 124 of the national defense act of June 3, 1916, under which the Muscle Shoals dam and water power plant are being constructed, contains the following clause:

"* * * The plant or plants provided for under this act shall be constructed and operated solely by the Government, and not in conjunction with any other industry or enterprise carried on by private capital. * * *"

This, of course, presents a serious legal question as to the authority of Secretary of War, the Federal Power Commission or other agencies of the Government to deal with the project without further legislation by Congress. In addition, funds must be provided and the delay and uncertainty of action by Congress is a very serious element in any proposal.

(*b*) This company is not advised as to the extent to which the Government is disposed to consider a portion of the investment as being due to war emergency; or what portion may properly represent its power supply for nitrate purposes, in addition to which it is assumed that a portion will be charged to the improvement of navigation of the Tennessee River. These are vital considerations, inasmuch as excessive costs would burden the entire future of the power development, increase the cost of power to consumers, and tend to discourage industrial enterprises which, with low power costs, should supply a market for a part of the Muscle Shoals power.

(*c*) This and other power companies engaged in public service are in duty bound promptly to find and develop sources of power at the lowest practicable cost to supply the rapidly increasing demands of the communities served. These demands are at this moment most insistent. To fulfill its immediate requirements this company has applied to the Federal Power Commission for a license and is about to construct an important additional hydroelectric development on the Coosa River. While it is true that the power thus secured will be completely absorbed and new sources required by the time the Muscle Shoals dam could be completed, yet the difficulties above mentioned and the doubt which arises from the apparent reluctance of Congress to sanction an arrangement of cooperation, as shown by the clause of the act of 1916 above quoted, suggest that this company would scarcely be justified in depending upon Muscle Shoals to take care of even more remote demands, which are certain to arise and which must be prepared for well in advance.

8. If the above difficulties and uncertainties can in any manner be cleared up, and excessive costs avoided by fair charges to war emergency, power for nitrate purposes, and improved navigation, this company is of the opinion that the development can go forward and be completed with the view of the sale and distribution of a sufficient volume of power therefrom by this company and other companies engaged in public service in the territory adjacent to this development to enable the United States to derive a reasonable return upon such part of the investment as may be properly allocated to the power feature of the project.

9. Our company, together with adjacent power companies, possesses the necessary organization for the distribution of the power to the public; and while the principal markets in the South are now served by those companies, their transmission systems would have to be supplemented by new lines and other equipment to market

this power. The power systems in the southeastern States are now interconnected and the advantage to the public of such interconnection was the subject of a careful survey by eminent engineers acting under your direction, and the subject is thoroughly discussed in a report prepared in the office of the Chief of Engineers by Col. Charles Keller and now printed as an official document entitled, "The Power Situation During the War."

We are inclosing with this letter further excerpts from that report which discuss at length the Muscle Shoals development. (See page 792.)

10. It will require much consideration and study to enable us to present any definite commitment, and would, furthermore, require a more definite statement as to when the power would be available and as to just what portion of the cost would be accepted as the investment in the power project; these being elements which you will appreciate are vital in determining a course in the matter so far as our ability is concerned to take the power at a price affording the United States a reasonable return.

We may add, however, that during our connection with the project, as shown by our formal proposals in response to the Government's invitation (Docs. Nos. 20 and 1262), we regarded the construction of a power dam (at reasonable costs and on commercial plans) at this locality as both a practicable and profitable undertaking; and if there is a possibility that the Government will wish to have any part of the power used in a practical way for commercial purposes, then we would like to urge now that some disposition of the matter be made as early as possible as you can appreciate that in its present status it is a disturbing feature in the industrial situation in this section.

If, therefore, authority is conferred by Congress to conclude a contract for the use of any part of the power by power companies, we wish to assure you that we are ready to work out a mutually satisfactory arrangement looking to the completion of the dam and the disposal of such part of the power as Congress wishes to place in commercial use; desiring now, as at all times in the past, to cooperate in every way desired by the United States in working out the matter.

Yours, very truly,

ALABAMA POWER CO.,
By THOS. W. MARTIN, *President.*

Mr. KEARNS. Does this company claim in this letter that this option was granted them because of the money they had expended in the preliminary construction of that plant?

Secretary WEEKS. In effect, I should think so.

Mr. MILLER. Mr. Secretary, there are six units in which the Government is interested, as I understand it, five of which are completed, that is, Dam No. 2, nitrate plants Nos. 1 and 2, the Warrior plant, and the Waco quarry.

Secretary WEEKS. And the transmission line. You do not understand that the dams are completed?

Mr. MILLER. No. In referring to the numbers of those dams some of us have been a little bit confused. Is there a dam No. 1 at Muscle Shoals?

Secretary WEEKS. I would like to have Gen. Beach explain that when he makes a statement to you. There is a dam, No. 1, scheduled as a part of the whole Muscle Shoals navigation project.

Mr. MILLER. Then Dam No. 1 has no relation to these negotiations?

Secretary WEEKS. No; that is a navigation project.

Mr. MILLER. I notice the Warrior steam plant is 88 miles southeast of nitrate plant No. 2.

Secretary WEEKS. Yes.

Mr. MILLER. There is a transmission line running there, is there not?

Secretary WEEKS. Yes. The Government constructed the transmission line on land that belongs to the Alabama Power Co.

Mr. MILLER. Are there any negotiations pending; is that entirely above there, or are there easements or rights of way to be acquired?

Secretary WEEKS. That land is not paid for.

Mr. MILLER. About how much would be the outlay for completing the transmission line from the Warrior steam plant to nitrate plant No. 2—that is, 88 miles?

Secretary WEEKS. You mean to clear the title?

Mr. MILLER. Yes.

Secretary WEEKS. That has never been figured, I am informed.

Mr. MILLER. It would be a substantial sum, would it not?

Secretary WEEKS. It is through comparatively wild country, but it would be a substantial sum, because of the distance of 88 miles.

Mr. MILLER. At the present time the Warrior plant is leased to the Alabama Power Co. for $75,000 a year?

Secretary WEEKS. Yes, that was our return for the calendar year 1921.

Mr. MILLER. Figuring on the basis of $4,605,000 that your report gives as the cost that would be between 1½ and 1¾ per cent of the cost?

Secretary WEEKS. That is leased on the basis of 1½ mills per kilowatt hour, and they used enough power last year to provide a revenue of $75,000.

Mr. MILLER. That is between 1½ and 1¾ per cent of the cost of that plant?

Secretary WEEKS. Yes.

(Thereupon the committee took a recess until 2 o'clock.)

AFTER RECESS.

The committee met, pursuant to recess, at 2 o'clock p. m.

The CHAIRMAN. The Secretary has not yet arrived, and while we are waiting for him I will have the clerk of the committee read a letter which I have received from the American Farm Bureau Federation through Mr. Silver, who is at the head of that institution, or the representative of the institution in Washington. He asked that the letter be read to the committee. It is a farmer proposition and favors the Ford proposal.

(The clerk read as follows:)

AMERICAN FARM BUREAU FEDERATION,
Washington, D. C., February 7, 1922.

Hon. JULIUS KAHN,
Chairman House Committee on Military Affairs,
House of Representatives, Washington, D. C.

DEAR MR. KAHN: The American Farm Bureau Federation desires to present to you the following statements which we would ask that you have read before your committee when it meets. It is not a brief but a practical statement of a business situation involving our interests in the Muscle Shoals development. We are making this request because we feel sure that you and your committee will sympathize with our position and desire to have this statement at the outset of your considerations.

As Washington representative of the American Farm Bureau Federation I desire to present to the committee a copy of the resolution adopted at our last annual convention in Atlanta, Ga. Also, I desire to present a copy of the resolution adopted without a dissenting vote by the agricultural conference called by the administration and held here the last week in January.

(Resolutions follow.)

We have indorsed the Ford proposal and urge its acceptance in good faith. The suggestions made by the Secretary of War are not new objections and have been presented by opponents of the proposal, all of which have been considered by us before arriving at a conclusion on this broad question. We believe that this proposal offers a solution to the Muscle Shoals question that will provide for the completion of the development of the project to the best interests of the people of the Nation, with the Government's need for explosives safeguarded, and secure the results sought by agriculture.

In connection with the appropriation suggested as necessary to carry out the Ford proposal, we wish to submit a copy of the letter we addressed to the Secretary of War on January 9 recommending a bond issue to cover the additional investment necessary. We wish to advocate the same proposal for your consideration.

There are no further comments on the Ford proposal that we desire to make at this time. However, I desire to request for the interests I represent that should arguments be presented that raise doubts in your mind as to the advisability of accepting the offer, that we be heard.

The Secretary of War has recommended as an alternative the completion of the Wilson Dam for "commercial purposes, the benefits to navigation, as well as the possible needs of the Government" and that the "Government may itself undertake to sell the produce to the best advantage." He goes on to point out that by not completing the full development the Government will only be required to expend $22,000,000. This Government completion and operation of the Wilson Dam will not furnish navigation without completing No. 3 Dam and entirely disregards the nitrate plants and makes no suggestion as to their operation. Obviously, the "product" of the Wilson Dam which is to be sold "to the best advantage" is not fertilizer, but power. This thought is further emphasized by the Secretary's suggestion to progressively install the power machinery as the power is disposed of.

We can not believe that your committee would report to Congress in favor of completing the Wilson Dam and not provide for the farmers at least an equal opportunity to secure the operation of the nitrate plant and the research provided for in the Ford proposal. And we ask that in case the Ford proposal is rejected and you decide to carry

out the recommendation to appropriate the necessary money to complete the Wilson Dam as a Government activity, that you will include some plan for the Government operation of the nitrate plants such as was before the last Congress in H. R. 10329, the Kahn bill, and which passed the Senate, and at the same time authorize the appropriation of the needed amount, at least $12,500,000, which was carried in this bill for the purpose of operating the plant and carrying on research provided in the Ford proposal. The above states our position as expressed in the Atlanta resolution, and we must endeavor to safeguard our interests in any authorization for the completion of the Wilson Dam by amending it with the Wadsworth-Kahn bill or an equally efficient alternative, carrying at the same time the necessary appropriation.

We wish to make plain our position. We are for the acceptance of the Ford proposal. We believe the Government interests and ours are mutual and amply safeguarded in that proposal and we believe it will prove a solution of the Muscle Shoals problem. Our contentions for Government operation are to be considered solely in case you decide against accepting the Ford proposal now before you, and in such case we must ask for extended hearings on this question of the operation of the plant, and will need a reasonable amount of time to prepare our case.

I respectfully request you to present this statement to the committee and feel confident you will appreciate our position.

Very truly, yours,

AMERICAN FARM BUREAU FEDERATION,
GRAY SILVER, *Washington Representative.*

(The two resolutions referred to follow:)

RESOLUTION IN REGARD TO MUSCLE SHOALS, PASSED BY THE AMERICAN FARM BUREAU FEDERATION AT THE ANNUAL CONFERENCE AT ATLANTA, GA.

We recognize in the Muscle Shoals nitrate water-power project in Alabama such an essential measure to secure the preservation of our soil resources as well as to develop the industrial and transportation facilities of our Nation, that we urge the Congress of the United States to authorize the Secretary of War to enter into such contract or contracts with Henry Ford for the completion and continuous operation of the project as will protect the public welfare. If such authority is not promptly given, we reserve the right to institute such action as will guarantee the completion and operation of this enterprise under Federal supervision.

RESOLUTION ADOPTED IN REGARD TO MUSCLE SHOALS AT THE AGRICULTURAL CONFERENCE CALLED BY SECRETARY OF AGRICULTURE WALLACE AT THE REQUEST OF PRESIDENT HARDING.

Resolved, To accomplish results without any further delay whatsoever, we urge the Secretary of War to recommend and the Congress to accept Henry Ford's proposal to take over the hydroelectric power and air nitrate plant at Muscle Shoals under a guaranty to operate same for 100 years, at its present capacity of approximately 100,000 tons of ammonium nitrate per annum, opening the Tennessee River to navigation, cheapening the production of fertilizer, metals, and other commodities and assuring the United States nitrogen independence in peace or war.

STATEMENT OF HON. JOHN W. WEEKS, SECRETARY OF WAR—Resumed.

The CHAIRMAN. I think when we adjourned, Mr. Secretary, Mr. Miller was asking you some questions, and we will proceed from that point.

Mr. MILLER. Mr. Secretary, according to Mr. Ford's offer there is a governmental investment here of between $105,000,000 and $106,000,000, out of which we will get nothing whatever except the $5,000,000 offered for the plant.

Secretary WEEKS. Substantially that is correct.

Mr. MILLER. In other words, there is $12,887,941.31 invested in plant No. 1, $70,979,851 in plant No. 2, $4,979,000 in the Warrior plant, and $52,000 in the Waco quarry, and $16,251,000 in the Wilson Dam, making a total of $105,943,000, as I figure it. Now, we will get no amortization or anything out of that?

Secretary WEEKS. No; except as $49,000,000 may exceed the cost of future constructions and of site and flowage rights.

Mr. MILLER. Then we have that much of a dead investment there; we will get amortization, though, on what it will cost to complete the Wilson Dam?

Secretary WEEKS. Yes.

Mr. MILLER. And the installation of Dam No. 3, which will be approximately $50,000,000?

Secretary WEEKS. Yes; that means completion of the two dams and equipping them.

Mr. MILLER. In other words, then, we have a dead investment there from which the Government will get nothing, of $105,000,000 or $106,000,000.

Secretary WEEKS. Except $5,000,000.

Mr. MILLER. Yes; except $5,000,000. By the way, will not the major portion of that $5,000,000 be absorbed in paying for the overflow damages in connection with Dam No. 3 and the completion of the transmission line from the Warrior plant?

Secretary WEEKS. I think about $1,500,000 will be absorbed in paying for the land damages and overflow damages from Dam No. 3; probably as much as that.

Mr. MILLER. Your engineers estimate it in your report at $2,000,000.

Secretary WEEKS. Yes.

Mr. MILLER. Now, it will cost a substantial amount to complete the transmission line and the easements and the right of way from the Warrior plant to nitrate plant No. 2.

Secretary WEEKS. Just how much that will cost no one knows.

Mr. MILLER. But that amount, whatever it is, and the overflow damages on Dam No. 3 will absorb a large portion of the $5,000,000 that Mr. Ford pays for the plant.

Secretary WEEKS. A considerable portion of it; yes.

Mr. MILLER. In other words, our $5,000,000, or the major portion of it, is gone, and that would leave $105,000,000 or $106,000,000 out of which we would get nothing. Just for the purpose of getting the matter geographically located, on which side of the river are these plants, or are they on each side of the river?

Secretary WEEKS. All of the holdings are on the south side of the river.

Mr. MILLER. The river, then, must flow in a southwestern direction, because you say that nitrate plant No. 1 is 6 miles southwest of Dam No. 2, and nitrate plant No. 2 is 2 miles northeast of nitrate plant No. 1.

Secretary WEEKS. Yes.

Mr. MILLER. None of these transmission lines have to cross the river?

Secretary WEEKS. No.

Mr. MILLER. There are apparently two angles to Mr. Ford's proposition; one is the manufacture of commercial fertilizer and a standby for the production of ammonium nitrate, and the other is the sale of waterpower.

Secretary WEEKS. Yes.

Mr. MILLER. There will probably be in the vicinity of 500,000 horsepower for sale by the completion of the two dams, will there not?

Secretary WEEKS. The horsepower on the Tennessee River is very irregular.

Mr. MILLER. I understand that.

Secretary WEEKS. There will be developed there about 140,000 horsepower primary power; perhaps 150,000 more that is available from 10 to 12 months of the year, and the balance, 560,000 horsepower, a lesser time, from 4 to 10 months, a total of 850,000 horsepower. It depends on the season, of course, and the condition of the water, but only about 140,000 horsepower can be counted on as primary power.

Mr. MILLER. That is, at all seasons of the year?

Secretary WEEKS. At all seasons of the year; yes.

Mr. MILLER. In any event, if the Government should go on and complete Dam No. 2 and not install Dam No. 3, and sell the water power, has the Government any transmission lines or would we have to construct those in order to distribute this power throughout the communities there?

Secretary WEEKS. You would have to construct more or less lines, but my judgment is that that would not be a very difficult matter, because there are several power companies operating in that general section of the country, and you could either use their lines or sell the power to them, or in some other way dispose of it.

Mr. MILLER. I had understood that a rather peculiar situation obtained there, and that the Alabama Power Co. had practically a monopoly of transmission lines in that part of the country, and that the construction of additional lines would be almost prohibitively expensive.

Secretary WEEKS. I do not think that is true.

Mr. MILLER. The natural purchaser of this surplus hydroelectric power would be the Alabama Power Co. and have it distributed over its lines; is not that true?

Secretary WEEKS. I think the Alabama Power Co. could handle it better than anybody else in that vicinity.

Mr. MILLER. I notice in connection with nitrate plant No. 1 that 19,000 acres of land were acquired and that the plant stands in the middle of that tract of land.

Secretary WEEKS. That should have been 1,900 acres instead of 19,000.

Mr. MILLER. I was wondering how it happened that there should be 5½ square miles of land there.

Secretary WEEKS. That is a misprint.

Mr. MILLER. Does the Government have any royalties to pay on any patent to the General Chemical Co. as a royalty on their process for the manufacture of ammonium nitrate?

Secretary WEEKS. That is one of the agreements that is in controversy. That is a matter that came up for discussion this morning. The Air Nitrates Corporation, I understand, is owned by the American Cyanamid Co. Are you talking about the General Chemical Co.?

Mr. MILLER. I was talking about the General Chemical Co. That relates to plant No. 1.

Secretary WEEKS. Yes; that relates to plant No. 1.

Mr. MILLER. Do we have to pay them any royalty or have we any engagement to pay them any royalty for their process which, I believe, is the Haber process?

Secretary WEEKS. I will read this paragraph of the agreement:

"In so far as the Government shall see fit to employ the said processes or apparatus or any of them in the manufacture of products to be used for fertilizers, the Government shall pay to the General Chemical Co. a royalty for such use. The royalty so to be paid shall be based upon the nitrogen content of the material produced for fertilizer purposes, and shall be at the rate of $5 for each ton of 2,000 pounds of fixed nitrogen in whatever form combined, and shall be payable quarterly until the 9th day of November, 1932, and thereafter until the expiration of all patents involving any substantial features of the process or apparatus."

Mr. MILLER. Then from now until 1932 we are to pay $5 a ton as a royalty for the Haber process.

Secretary WEEKS. Yes.

Mr. MILLER. That plant Mr. Ford does not intend to operate, as I understand it.

Secretary WEEKS. I do not understand that he intends to operate it.

Mr. MILLER. Now, on plant No. 2, which is the one that the Air Nitrates Co. constructed, what royalties, if any, do we pay on that?

Secretary WEEKS. I will just read you that paragraph:

"In consideration of the granting of the licenses provided for in article 1 hereof, and of the other conditions to be performed by the licensor, the licensee agree to pay to the licensor during the term thereof specified in said article as royalty an amount equivalent to 6 mills per pound of all nitrogen fixed as lime nitrogen manufactured at the plant hereinbefore described in the contract of even date herewith between the United States and the Air Nitrates Corporation, and to which reference has hereinbefore been made and up to and including the first 91,700,000 pounds of such nitrogen so fixed in any fiscal year of the United States; and in addition thereto, 3 mills per pound of all nitrogen fixed as lime nitrogen in any said fiscal year in excess of the said 91,700,000 pounds of nitrogen, it being further understood and agreed that no party of such royalty shall directly or indirectly inure to the benefit of an alien enemy of the United States except as may appear upon a disclosure of stock lists made pursuant to law. Payment for royalties shall be made each month as early in the month as practicable upon the presentation of satisfactory evidence showing the production during the preceding month of nitrogen fixed as lime nitrogen at the plants hereinbefore referred to."

Mr. MILLER. Then at each of these plants, if we are to pay these respective royalties. I suppose that will become a part of the overhead in the manufacture of the fertilizer.

Secretary WEEKS. Just a moment, and I will add something pertinent to that last statement. The royalty to the Air Reduction Co. until January, 1931, is $2.72 per ton of nitrogen fixed as lime nitrogen. After that date, there will be no royalties charged.

That is in addition to what I have just read.

Mr. MILLER. Have we paid those companies any royalty? As I understand it, plant No. 1 has never produced anything.

Secretary WEEKS. No royalty has been paid on No. 1 at least. I am told that not in excess of $1,500 has been paid at No. 2.

Mr. MILLER. I suppose those royalties, whatever they may be, will be a part of the overhead in the manufacture of fertilizer and the United States will not be bound for the payment of those royalties although this contract is with the United States?

Secretary WEEKS. Yes.

Mr. MILLER. That will be a part of the overhead charge if Mr. Ford is to operate the plant and will go into the cost of the fertilizer, is not that the idea?

Secretary WEEKS. I think so.

Mr. MILLER. Has your department made any research as to what proportion of the amount of commercial fertilizer used in the United States will be produced at the Muscle Shoals plant by the full operation of plant No. 2?

Secretary WEEKS. The total production of fertilizer in the United States during 1920 amounted to 7,700,000 tons. The total nitrogen content of this fertilizer probably amounted to 160,000 tons. About one-half of this, or 80,000 tons, was inorganic nitrogen. The No. 2 nitrate plant can produce some 200,000 tons of sulphate of ammonia per year, which contains some 40,000 tons of nitrogen. Or, in other words, this plant can produce about one-fourth of all the nitrogen used in fertilizer or about one-half of the inorganic nitrogen used in fertilizer.

Mr. MILLER. Just for the purpose of information, both of these plants produce ammonium nitrate, plant No. 1 by the Haber process, and Plant No. 2 by the cyanamid process, and the first plant has a production of 22,000 tons a year if operated, and the latter plant 110,000 tons a year if operated. I do not know myself how many tons of fertilizer one ton of ammonium nitrate will make.

Secretary WEEKS. I think you had better ask that question of Gen. Williams or Maj. Clement or somebody who has been giving particular attention to it, because my answer quite likely would not be accurate.

Mr. MILLER. I read some time ago a rather astounding article in an agricultural paper which was to the effect that if the Muscle Shoals plant should be operated and commercial fertilizer manufactured there, and if it was possible to manufacture that fertilizer at a much lower price than fertilizer commands in the market—that is, the Chilean article—that our imports would cease.

Secretary WEEKS. You are speaking of nitrates now.

Mr. MILLER. Yes; and that the American farmer would be wholly dependent upon the Muscle Shoals plant because they could not compete with that. I do not suppose there is any apprehension along that line.

Secretary WEEKS. I have not been called upon to have any apprehension along that line.

Mr. MILLER. The main point, Mr. Secretary, that I was after, was to ascertain whether or not the operation of the Muscle Shoals plant would yield the very beneficent results to the American farmer that he is expecting out of it.

Secretary WEEKS. I wish I could answer that question with definiteness. I do not think any one can, but I am fearful that the American farmer will be disappointed.

Mr. MILLER. In reference to the sale of this surplus hydro-electric power there, in the first place, the navigation of the Tennessee River is inseparably connected with this enterprise down there, is it not?

Secretary WEEKS. If the river is to be navigated, it must be taken into consideration at this time.

Mr. MILLER. Mr. Ford in his proposition sets aside an amount sufficient for the practical operation of the locks at Dams No. 2 and No. 3.

Secretary WEEKS. Yes.

Mr. MILLER. He sets aside a sinking fund from a semi-annual payment of $3,505 for Dam No. 3, and $19,868 for Dam No. 2, which placed at interest for a period of 100 years or 97 and 93 years, respectively, would yield about $49,000,000.

Secretary WEEKS. Yes; that is, at 4 per cent.

Mr. MILLER. Then he agrees further to pay 4 per cent on what it will cost to complete Dam No. 2 and the entire construction of Dam No. 3.

Secretary WEEKS. Yes.

Mr. MILLER. The Government, then, is doing this: It is advancing to Mr. Ford Government money at 4 per cent, also giving him the benefit without anything in return of over $17,000,000 that we have expended on Dam No. 2. That is right, is it not?

Secretary WEEKS. Yes.

Mr. MILLER. Now, on an enterprise which I guess we are all in a position to admit now is going to be of no practical benefit to the farmer, or at least not the benefit he thinks it is going to be, the Government is going into an enterprise of financing Mr. Ford's proposition to the extent of $50,000,000 more and losing between $105,000,000 and $106,000,000, that we get nothing out of it, and giving him the benefit of $16,850,000 that we have already put into Wilson Dam No. 2.

Secretary WEEKS. That is included in the figures you mentioned before of $105,000,000 or $106,000,000.

Mr. MILLER. That is, the Wilson Dam?

Secretary WEEKS. Yes.

Mr. MILLER. Then it will be cut down to $86,000,000 or $87,000,000?

Secretary WEEKS. Yes.

Mr. MILLER. Then we are giving Mr. Ford, or, from the Government's point of view, we are losing entirely the investment of $85,000,000 that we have in nitrate plant No. 1 and No. 2, the Warrior plant, the Waco quarry, and the $16,000,000 we have spent on Dam No. 2?

Secretary WEEKS. Well, you do not want to say "entirely."

Mr. MILLER. No; we get $5,000,000 for it.

Secretary WEEKS. Yes.

Mr. MILLER. Which, as we have seen previously, will be almost wholly absorbed in paying the overflow damages on Dam No. 3 and the completion of the Warrior power plant.

Secretary WEEKS. Partially absorbed.

Mr. MILLER. The fact of the matter is the United States Government is getting nothing out of this thing, as I see it.

Secretary WEEKS. The United States Government is getting two or three things out of it which you have not called attention to.

Mr. MILLER. We are getting this plant as a stand-by in case of war to make ammonium nitrate for war purposes.

Secretary WEEKS. Mr. Ford is to keep in condition for operation the nitrate plant No. 2 for the use of the Government. It would cost about $2,500,000 for the locks at the Wilson Dam. That is included in the cost on which Mr. Ford, as his proposition now stands, will pay interest at 4 per cent. So that the Government gets those two benefits. Then, if Mr. Ford is going to develop industrial business there, which I should think he would be able to tell and be willing to tell the Congress, it is of moment to the people of the country to have developed industrial business, and I think those things should be taken into account.

Mr. MILLER. Yes; that is an indirect benefit; there is no question about that; but so far as the United States Government is concerned. Mr. Secretary, if we should tell Mr. Ford to-day, "We will make you a present of the Waco quarry, the nitrate plants No. 1 and No. 2, the Warrior steam plant, and what we have put into the Wilson Dam, provided you will complete the Wilson Dam and furnish the money yourself, and keep nitrate plant No. 2 in readiness for war emergency," the United States Government would be ahead in the transaction, would it not?

Secretary WEEKS. I do not think the United States Government, as a Government, is at all interested in Dam No. 3.

Mr. MILLER. I did not say Dam No. 3; I said Dam No. 2.

Secretary WEEKS. Of course, if Dam No. 2 is constructed, and electrical power is furnished to run the nitrate plant in case the Government needs to operate it, it would be very much cheaper than steam power.

Mr. MILLER. But what I was getting at, Mr. Secretary, is that if the United States Government should say to Mr. Ford, "We will give you nitrate plants Nos. 1 and 2 out and out, we will give you the Warrior steam plant, we will give you the Waco quarry, we will give you what we have put into the Wilson Dam, which is $16,000,000, if you will go on and complete the Wilson Dam and pay us the amount of rental at 4 per cent on what has been put into it," the United States Government would be ahead on the deal; that is, it would be better for the United States Government than the present proposal.

Secretary WEEKS. I do not think it would be very much ahead, and I do not think it would be very much behind.

Mr. MILLER. Then we are practically giving this proposition and financing it for 100 years at 4 per cent.

Secretary WEEKS. Yes; but you are getting your money back.

Mr. MILLER. We get our money back at the end of 100 years, five generations off, when we will all be dead and gone.

Secretary WEEKS. You know that I want to get it back in half that time.

Mr. MILLER. Yes; I understand you favor 50 years.

Secretary WEEKS. May I call your attention to the fact that a navigation project is being developed in connection with the development of the dam, and in connection with that navigation project the man who is making the development pays interest on the cost and returns the money.

Mr. MILLER. That is right, but would the navigation of the Tennessee River be possible without the completion of the projected Dam No. 1? Suppose we go ahead and build Dam No. 2, as Mr. Ford wants us to do, how about the navigation of the Tennessee River?

Secretary WEEKS. I should have to ask Gen. Beach or Gen. Taylor to testify exactly as to that.

Mr. MILLER. Is it your understanding that the Tennessee River will be rendered perfectly navigable without the construction of Dam No. 1?

Secretary WEEKS. I do not think it can be. Of the expenditures on Dam No. 2, up to this time, $500,000 is allotted to navigation, and it will cost about $2,500,000 to complete the locks.

Mr. MILLER. Then from the standpoint of aiding navigation on the Tennessee River, we will have to complete a third dam, will we not?

Secretary WEEKS. Yes; to complete it, but just exactly what that would cost or how much would have to be done there, I can not say.

Mr. MILLER. Then take the three propositions—the fertilizer, the navigation of the Tennessee River, and the sale of surplus power—in order to get the fertilizer production, we have got to put in $50,000,000.

Secretary WEEKS. You will be told by these engineers that the cost of making the river navigable over Muscle Shoals, if the dams are not constructed, will approximate $8,000,000. The navigation, however, would not be as good as that created by the dams.

Mr. MILLER. The three elements I have mentioned are the three elements involved in this project at Muscle Shoals, as I see it.

Secretary WEEKS. They are a part of it.

Mr. MILLER. Absolutely, and you can not separate them, as I see it, because Mr. Ford makes an allowance of $35,000 a year for the operation of one of those locks, and if there was no navigation, of course, there is no outlay there, and he has $35,000 of velvet in that item alone.

Secretary WEEKS. I am not so sure about that. I am not so sure but what the Government would get that $35,000 if one rowboat went through there.

Mr. MILLER. Mr. Secretary, I notice at the bottom of page 4 you say that the Waco quarry was acquired at a cost of $52,962 and comprises 460 acres of land.

Secretary WEEKS. Yes.

Mr. MILLER. Now, turning over to page 20 of your report, I see that the Ordnance Department claim that what we paid $52,000 for can be scrapped for $102,000.

Secretary WEEKS. That is the figure, but that includes the equipment. The quarry has been equipped since that time.

Mr. MILLER. We have built a railroad from the Waco quarry up to nitrate plant No. 2, have we not?

Secretary WEEKS. The Government did build a spur back there about 1 mile long.

Mr. MILLER. Then we installed, I daresay, some very expensive equipment at Waco quarry—rock crushers, and things of that kind.

Secretary WEEKS. I have no doubt but what it is adequate.

Mr. MILLER. I notice an item of the "Drifton Railroad," on page 20. Is that the 1-mile road you refer to or the spur track that you refer to?

Secretary WEEKS. No; that is not the road to which I referred. That is a special road that was put into the Warrior plant.

Mr. MILLER. The purpose of the erection of this Warrior plant, 88 miles distant from nitrate plant No. 2 and the dam at plant No. 2, was for the purpose of putting the steam plant near the coal mines where fuel would be readily available?

Secretary WEEKS. Yes; that was the purpose.

Mr. MILLER. Does the Government own that coal mine?

Secretary WEEKS. No, sir.

Mr. MILLER. The Government buys its fuel there?

Secretary WEEKS. That is what the Government would have to do.

Mr. MILLER. That plant is being leased now to the Alabama Power Co. for $75,000 a year, which is between 1½ and 1¾ per cent of the cost of the plant.

Secretary WEEKS. That is what the plant netted last year, $75,000, based on the amount of power they used.

Mr. MILLER. How long a lease is that, may I ask, Mr. Secretary?

Secretary WEEKS. For the life of contract T-69 and until the Government shall dispose of the plant.

Mr. MILLER. I thank you, Mr. Secretary. I think that is all.

Mr. PARKER. Mr. Secretary, I understand that plant No. 2 is useful for war purposes and can be used now with steam power and will be retained even if the dam is not built.

Secretary WEEKS. Undoubtedly.

Mr. PARKER. You spoke of some royalties payable from that plant, but in reading from the paper as to the 6 mills and 3 mills a pound and the other royalties, you did not state who the licensor was.

Secretary WEEKS. One of the licensors is the American Cyanamid Co., and the other is the Air Reduction Co.

Mr. PARKER. You read one that received a royalty of 6 mills a pound.

Secretary WEEKS. That is the American Cyanamid Co.

Mr. PARKER. Are those licenses to the United States or to somebody else?

Secretary WEEKS. They are both made to the United States.

Mr. PARKER. Are they assignable, so that they would go to Mr. Ford?

Secretary WEEKS. That is a question that is somewhat debatable, I think. I would like to have you ask Gen. Hull, the Acting Judge Advocate General, about that subject.

Mr. PARKER. There is nothing in the proposal of Mr. Ford proposing to take over those licenses or anything of the sort.

Secretary WEEKS. In subdivision (a), under section 11, page 16, of Mr. Ford's offer, it says:

"All of the property constituting nitrate plant No. 2 (as officially known and designated), including lands, power plants, buildings, material, machinery, fixtures, equipment, apparatus, appurtenances, tools, and supplies, and the right, license, and privilege to use any and all of the patents, processes, methods, and designs which have been acquired and may be transferred or assigned to a purchaser of nitrate plant No. 2 by the United States, together with the sulphuric acid units now in storage on the premises."

Mr. PARKER. I see from the proposal that he proposes to pay $5,000,000 for all this property in five installments, and that after he pays $1,000,000 gets possession, and after he pays the whole $5,000,000 he gets a deed of conveyance. Of course, that gives him full title with warranty of the title to be good and unencumbered, and nevertheless he agrees after he gets title, seemingly, to operate this nitrate plant No. 2. This is not made a part of the deed. After he has acquired that title, have you anything to prevent him from selling the title to somebody else free of the clauses of this contract?

Secretary WEEKS. The title to No. 2?

Mr. PARKER. Yes.

Secretary WEEKS. He agrees to keep that in condition for 100 years for the use of the Government. I think that would prevent his selling it.

Mr. PARKER. He is to maintain it, but he takes a deed and the title to it first.

Secretary WEEKS. I know, but he can not sell a piece of property which he agrees to maintain for 100 years for the use of the Government.

Mr. PARKER. There would have to be some sort of a reservation by the United States in the deed, I take it. I notice we are to give him a full deed, free and unencumbered. I am speaking now of his proposal and not of your way of carrying it out, because I have no doubt we will get that straightened out, but it seems to me rather odd when a man takes a piece of property under an agreement to maintain it for 100 years, that he should take a deed instead of taking a lease. The deed ought not be effective until the end of the 100 years.

Secretary WEEKS. Mr. Ford declined to consider a lease of that property.

Mr. PARKER. And he would get a full title and the Government would have only a collateral agreement to use it in a certain way.

Is there any navigation now on the Tennessee River?

Secretary WEEKS. At Muscle Shoals.

Mr. PARKER. Through from above Muscle Shoals down, say, to New Orleans.

Secretary WEEKS. There has been some navigation there but there is no navigation now possible on account of the condition of Dam No. 2.

Mr. PARKER. I notice, and I think I am right, that the 4 per cent on the $50,000,000 which is to be spent on Dam No. 2 and Dam No. 3 and the other payments preliminary to the 4 per cent do not begin until after the dams are completed so that they furnish horsepower.

Secretary WEEKS. There are slight payments commencing at the beginning. Mr. Ford's offer is quite explicit on that subject, but on Dam No. 2 the full payments do not commence until six years after the first 100,000 horse power are available.

Mr. PARKER. Taking up No. 2 first, I notice that he leases the property from the date when structures and equipment of a capacity of 100,000 horsepower are constructed and installed and ready for service—that is, after the completion of the dam; and by paragraph 7 he leases No. 3 for 100 years from the time when 80,000 horsepower is installed and ready for service.

Secretary WEEKS. You will notice in the latter part of paragraph 3, page 15, $200,000 one year from the date when 100,000 horsepower is installed and ready for service, and thereafter $200,000 annually at the end of each year for five years.

Mr. PARKER. I notice that covers the five years, but none of those payments is made until after the dam is completed.

Secretary WEEKS. Until 100,000 horsepower has been installed.

Mr. PARKER. And that can not be until the dam is completed.

Secretary WEEKS. No.

Mr. PARKER. And the same thing is true of the other dam, so that the United States get no payment whatever on account of the interest on what it spends until after the dam is completed.

Secretary WEEKS. Substantially, I think, that is correct.

Mr. PARKER. How long will it take to complete Dam No. 2?

Secretary WEEKS. That would depend on the way it is done; but in all probability two years.

Mr. PARKER. How long will it take to complete Dam No. 3?

Secretary WEEKS. I should think probably the construction would take about the same time. Whether the two dams would be constructed at the same time or not, I do not know.

Mr. PARKER. On Dam No. 3 you have to find out about the foundations?

Secretary WEEKS. Nobody knows about that. The plans and specifications are not yet prepared.

Mr. PARKER. Then you do not know how long it will take to complete that dam after you once begin to spend money on it?

Secretary WEEKS. The Army engineers place the time of completion of Dam No. 2 at 40 months. Personally I think that is too much, and if Mr. Ford contracts this work under the direction of the Army engineers, I think it will be done quicker. The time of completion of Dam No. 3 is placed at 36 months.

Mr. PARKER. Does that include the installation of the machinery, etc., for the development of the 80,000 and 100,000 horsepower?

Secretary WEEKS. I think it does. The first 100,000-horsepower machinery is already under contract for Dam No. 2.

Mr. PARKER. During the time of the building of the dams, the United States gets no interest on its expenditures, and after completion for the first five years it gets rather small interest, $200,000 on $22,000,000, which is a little less than 1 per cent, for the first five years, is it not?

Secretary WEEKS. It would depend on how much money is already put into it.

Mr. PARKER. I mean when they get to paying interest, after the lease is made and the dam is ready for service, and $22,000,000 has been spent, they get only $200,000 a year for the first five years, which is less than 1 per cent on the $22,000,000.

Secretary WEEKS. That question of interest is covered in the statement on page 22, but you are substantially right in saying that the Government, for the first six years, does not receive any substantial interest on the investment.

Mr. PARKER. After the dam is completed, aside from the time consumed in building the dam.

Secretary WEEKS. And it is true that if this were being done in an entirely business-like way, the interest on construction cost would become a part of the capital of the enterprise on which interest should be paid.

Mr. PARKER. And that is not in this contract?

Secretary WEEKS. That is not in this contract. That would be in accordance with the policy of the Interstate Commerce Commission.

Mr. HILL. Mr. Secretary, there are two things I would like to ask you about. On page 5 of your letter to the Speaker reference is made to the claims of the Air Nitrates Corporation to purchase nitrate plant No. 2 on as favorable terms as those offered by Mr. Ford, and your letter continues by stating that the Alabama Power Co. may make a similar claim in regard to the Warrior plant and lease. I think the committee would be interested to know whether that would seriously interfere with this proposal to purchase. Would there be serious litigation for the Government arising out of the claims of those companies?

Secretary WEEKS. I can not tell how serious it would be. I supposed that the Air Nitrates Corporation had a legal option to purchase. I am informed it has not. That is a matter, however, that will have to be adjudicated, and if you will ask the Acting Judge Advocate General, who is present, Col. Hull, he will answer that question more completely; but undoubtedly it will be necessary for the United States to furnish a title both to plant No. 2 and the Warrior River plant.

Mr. HILL. On page 9 the statement is made in your letter that these properties cost the United States approximately $85,000,000, and that as scrap they are estimated to be worth $8,812,000, but that the Chief of Ordnance thinks it might be possible to dispose of the property at $16,272,000.

Secretary WEEKS. Yes.

Mr. HILL. Mr. Miller asked certain questions about the Ford proposal in reference to the general agricultural interests, and I would like to ask you regarding the Muscle Shoals proposition in its present form, forgetting what it cost, but looking at it simply as it stands at the present time, if the Ford proposition were not favorably received by Congress, purely as a national-defense proposition, has the War Department worked out a recommendation that it would make for the disposition of this plant; that is, purely as a national-defense matter, what would they do with it?

Secretary WEEKS. As far as plant No. 2 is concerned, they would maintain plant No. 2, because that does furnish them the facilities for obtaining nitrates in case of

war up to 100,000 tons a year. Then the United States might conclude to complete Dam No. 2 to obtain the power cheaply and to sell the power in the meantime. I have not very much doubt but what it would sell a considerable part of the balance of the property, and I think I have assurances that it could sell that property at materially more than the estimated scrap value by taking time.

Mr. HILL. If they maintained plant No. 2 for national-defense purposes and sold the rest of the plant, the United States would then retain all the benefits of the defense elements of the situation without the expenditure of any very great amount, would they not?

Secretary WEEKS. Yes.

Mr. WURZBACH. Mr. Secretary, I understand the second proposition of Mr. Ford is based upon the theory that the Government will accept or refuse his proposition, implying that Mr. Ford is not favorable to listening to any counterproposal made by the Government.

Secretary WEEKS. I do not know whether he is or not. Mr. Ford left my office on the 13th of January saying that he would not do several things which he pretty promptly permitted his engineers to put into this contract which is before the committee.

Mr. WURZBACH. You do not think, then, that the failure of the Government to accept his last proposal would mean that he would not consider any counter proposition on the part of the Government.

Secretary WEEKS. I think it is very difficult for Congress to make counter propositions or to agree on counter propositions. I should think, as a practical measure, as far as the Ford proposition is concerned, practically speaking, it is up for acceptance or rejection. If an individual were dealing with Mr. Ford, it would be comparatively easy to make counter propositions.

Mr. WURZBACH. I understand, but do you not think he has put the proposition up to the Government in a way that it does not admit of any counter proposals by the Government, or do you construe it in that way?

Secretary WEEKS. If you think you could get through Congress a counter proposal, which I do not think you could—I think it would be almost a hopeless task—and the counter proposal were better than this, Mr. Ford might accept it.

Mr. WURZBACH. I notice in section 14 of Mr. Ford's last proposal, the company agrees to operate Nitrate Plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes and so on. I wish you would translate that 110,000 tons of ammonium nitrate into fertilizer products. What does that mean?

Secretary WEEKS. That would mean about 200,000 tons, or perhaps a little more, of ammonium sulphate.

Mr. WURZBACH. That is the fertilizer product.

Secretary WEEKS. But I do not want you to get me into a technical discussion of fertilizer products, because I might become embarrassed.

Mr. WURZBACH. This is sort of Greek to me, and I am simply trying to get some information about it. Do you not take it, Mr. Secretary, that that means an obligation on the part of Mr. Ford to agree to this proposal to furnish a certain amount of fertilizer?

Secretary WEEKS. That paragraph says that the company will.

Mr. WURZBACH. That the company will, without reference to the authority of the company to bind itself, but this does mean that this proposal agrees to bind the obligors to the performance of a certain obligation, does it not?

Secretary WEEKS. It agrees that the company that Mr. Ford is going to form will do that.

Mr. WURZBACH. Yes. Now, I have some serious doubts myself about the necessity of requiring Mr. Ford or whoever makes this application to secure the faithful performance of his contract, but do you not think that section 19, which reads as follows, "the above proposals—that includes 14 and all the other sections—are submitted for acceptance as a whole and not in part. Upon acceptance, the promises, undertakings, and obligations shall be binding upon the United States and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors and assigns; and all the necessary contracts, leases, deeds, and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed and delivered by the respective parties above mentioned," do you not think that that contemplates some further contract upon the part of the Government and also upon the part of Henry Ford to carry out these agreements.

Secretary WEEKS. Oh, undoubtedly, there will have to be other contracts and agreements relating to the details of this subject.

Mr. WURZBACH. To carry out the purposes of this proposal.

Secretary WEEKS. But I should not have raised the query in my comment if I had thought that that was entirely satisfactory from the Government's standpoint.

Mr. WURZBACH. In other words, this proposal of Henry Ford is not supposed to be the final agreement that is to be entered into between Henry Ford and the Government.

Secretary WEEKS. I do not think that he would be willing to say that there should be any essential change in this proposal.

Mr. WURZBACH. But within the limits of this proposal, binding himself and his heirs and assigns, do you not think it was contemplated by Henry Ford that he would be willing to enter into other agreements, the details of which would be set out in the final agreement to protect the Government in the faithful performance of his agreement?

Secretary WEEKS. I should hope he would.

Mr. WURZBACH. Do you not think that section 19 was contemplated by Henry Ford as leaving the way open to provide for the protection of the Government in the carrying out of the obligations undertaken in this agreement?

Secretary WEEKS. Yes; but you must remember, Mr. Wurzbach, that Congress is going to accept or reject this proposal, and if Mr. Ford said that that was satisfactory, and that is what the Government had accepted, I do not see how he could be led into doing something more than he has promised. I am not impugning Mr. Ford's good faith or his intentions, but 100 years is a long time. You are dealing with a corporation that has no fixed capital. You do not know anything about how long Mr. Ford is going to live, or what shape his estate will be in; not that it will not be solvent, I do not mean to suggest that, but in what way it will be tied up, and the only recourse you have here is for the Attorney General to proceed against somebody for damages. Now, that is a difficult matter to settle.

Mr. WURZBACH. Do you not think there would be a natural disposition upon his part, in view of the fact that by the terms of section 19 he obligates and binds himself, his heirs and assigns, to give some adequate protection to the Government to secure the faithful performance of this contract?

Secretary WEEKS. I should think there would be, but if I were making the contract and was responsible to the Government, I would have that guaranteed.

Mr. WURZBACH. Yes; I would, too. Of course, you understand that a proposal of this kind or a preliminary proposal in any kind of a contract could not go into the details of the entrire proposition. It would be a general proposition, would it not?

Secretary WEEKS. That question of a guaranty has been brought to Mr. Ford's attention. It is not in his offer.

Mr. WURZBACH. This implies by its very terms that Mr. Ford intended to go into the details of the matter of protecting the Government because it reads:

"The above proposals are submitted for acceptance as a whole and not in part. Upon acceptance, the promises, undertakings, and obligations shall be binding upon the United States and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors and assigns; and all the necessary contracts, leases, deeds and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed and delivered by the respective parties above mentioned."

Secretary WEEKS. Let me turn questioner for a moment, suppose you accepted this offer of Mr. Ford and then you wanted to put a guaranty in there, do you think you would have any right to compel him to make a guaranty?

Mr. WURZBACH. I think the plain implication of this proposition would be that the Government would be entitled to protect itself in this contract.

Secretary WEEKS. I hope that is so.

Mr. WURZBACH. Yes; I hope so, too, because I would not be in favor of it unless there was some security to the Government that these obligations that are undertaken in this proposal were secured to the Government, and I was wondering whether that last section, section 19, did not provide for that very thing.

Secretary WEEKS. That is the reason I raised the query, to bring it to the attention of the committee.

Mr. WURZBACH. Yes; I understand. That is all.

The CHAIRMAN. At this point I will read into the record a telegram I had from Mr. Liebold, private secretary to Mr. Ford. I wired Mr. Liebold to say that the committee would begin its hearings to-day and that the Secretary of War would be before the committee the greater part of the day, but we would like to have Mr. Ford or his representatives present. Mr. Liebold sent me this telegram:

"Your telegram even date received; at this date it is impossible for Mr. Ford to arrange to appear before your committee on the date mentioned; if there is any special information you desire can we not furnish same from here?

"E. G. LIEBOLD."

I could not very well imagine how we could send a telegram to Dearborn or Detroit on everything we wanted to ask him about, and I therefore sent this telegram:

WASHINGTON, D. C., *February 7, 1922.*

Mr. E. G. LIEBOLD,
General Secretary to Henry Ford, Dearborn, Mich.:

Telegram received. Committee would like to have Mr. Ford or his representative here in order to answer a few questions which probably he or his representative can answer better than anybody else. There is every disposition on the part of the committee to treat Mr. Ford or his representatives fairly. The Secretary of War will consume a good part of the day on the 8th. We desire to finish the matter with as little delay as possible. Could Mr. Ford or his representatives come on the 9th, 10th, or 11th?

JULIUS KAHN, *Chairman.*

I have had no answer to that telegram.

Mr. WURZBACH. There is just one more question I would like to ask. Mr. Secretary, do you not think that the proposal of Mr. Ford in section 19 especially is consistent with the idea that he intends in the final consummation of this contract to go into the details and make provisions securing his faithful performance of the contract that he enters into by the terms of that contract?

Secretary WEEKS. I hope that is his intention; but with whom is he going to do that?

Mr. WURZBACH. You do not think there is anything in the proposal that is inconsistent with that idea?

Secretary WEEKS. No; but I think it would have been very easy to have put in there what I wanted to put in; that is, either sufficient capital for this company or a guaranty, which would be tangible, that the contract was to be carried out.

Mr. WURZBACH. I think so, too; but you do not think his proposal is inconsistent with the idea of his giving that security, do you?

Secretary WEEKS. I stated before that I had no desire to question Mr. Ford's motives.

Mr. CRAGO. Mr. Secretary, recognizing the fact that as a part of our military policy of preparedness, the Government already has invested this large sum of money in these propositions, and also recognizing the fact, as I have no doubt you do, that it is not well for the Government to engage in any commercial enterprises in competition with individuals, I would like to know your own personal opinion, as a public official and as a man of business and as a patriotic citizen, as to the advisability of Congress accepting this proposition.

Secretary WEEKS. If I thought there was going to be, as a result of this agreement with Mr. Ford, imperfect as I consider it, a material reduction in the cost of fertilizers to the users of fertilizers; if I thought there was a certainty of that, I think, if I were in Congress, I should vote for this proposal; but I am so much in doubt about it that I should hesitate to do it because I think other disposition can be made of this plant, leaving the question of fertilizer out of consideration, which would be of greater advantage to the Government than this particular one.

Mr. FIELDS. Mr. Secretary, from the questions asked you by Mr. Miller a while ago one not familiar with the subject might be led to believe that Mr. Ford is asking the Government to sell him $86,000,000 worth, or possibly $105,000,000 worth, of property for $5,000,000. I will ask you to state what is the estimate in salvage value of the property proposed to be purchased by Mr. Ford?

Secretary WEEKS. That will be found on page 20 of this House Document 167. The estimated scrap value is $8,812,000. With an operating concern operating it with scrap, the Chief of Ordnance has worked out the value as $16,270,000.

Mr. FIELDS. The estimated salvage or scrap value as fixed by the War Department is $8,812,000?

Secretary WEEKS. Yes.

Mr. FIELDS. Therefore Mr. Ford's offer is only $3,812,000 less than the department's estimated scrap value of the property?

Secretary WEEKS. Yes.

Mr. FIELDS. I notice on page 20, in Exhibit E, an analysis of the cost to the Government by reason of its failure to collect interest during the construction of the Dam No. 2 you have some detailed figures, and I would like to ask at this point that a similar analysis be prepared and put into the hearing as to what the expense would be to the Government if it does complete this work—that is, what the added expense would be, allowing the same rate for interest charges on the capital invested.

Secretary WEEKS. I will have that done.

Mr. FIELDS. I believe you stated earlier in the hearing that this plant, nitrate plant No. 2, is ready for the production of nitrates; that is, nitrates used in explosives, is it not?

Secretary WEEKS. Yes.

Mr. FIELDS. There would be considerable additional expense to prepare this plant for the production of the elements going into fertilizer?

Secretary WEEKS. Yes; but depending altogether on the manner in which the fertilizer was going to be made; I mean the process that was to be used and the amount to be used.

Mr. FIELDS. The amount which is apparently contemplated by the proposition of Mr. Ford is 110,000 tons a year. What would be the additioanl cost of equipping this plant for the production of that amount of ammonium sulphate?

Secretary WEEKS. If you put in an ammonium sulphate plant to use the entire product the estimated cost would be about three million dollars. Mr. Ford's engineers stated in interviews which I had with them that it was his proposition to invest between ten and twelve million dollars. I do not know exactly how he would invest that, and I do not know that he knows exactly how.

Mr. FIELDS. He would at least have to invest three million dollars before he could begin to produce ammonium sulphate?

Secretary WEEKS. In any considerable amount.

Mr. FIELDS. Before he could get very far he would have to invest about three million to possibly ten million dollars in the equipment of his plant?

Secretary WEEKS. I think so, probably.

Mr. FIELDS. I believe it is stated in House Document No. 167, either in your report, the report of the Chief of Engineers, or the report of the Chief of Ordnance, that it cost $201,674 to maintain nitrate plant No. 2 in stand-by, idle condition last year?

Secretary WEEKS. Yes.

Mr. FIELDS. Approaching this from the standpoint of preparedness, in which we are all first interested, that is, the members of this committee, if the Government is to maintain this plant for preparedness, its first cost would be $200,000 a year to maintain it?

Secretary WEEKS. Not necessarily, because we are leasing the steam plant now for $10,000 a month, plus 2 mills a kilowatt hour for the amount of power used, so that the minimum receipts would be about $120,000, and the maximum receipts about $250,000. That is leased for a year, on a revocable lease.

Mr. FIELDS. At least, in computing the charges against the plant, we would first have to consider the cost to the Government of maintaining it, which would be $200,000 a year?

Secretary WEEKS. Let me correct you on that. I am informed by an officer who is perfectly familiar with the plant that it will cost this year about $120,000.

Mr. FIELDS. Calling that insurance for preparedness, then, for the life of Mr. Ford's lease, that would run into several million dollars.

Secretary WEEKS. You will note—I do not know that it can be done every year, but we will get out of the Warrior plant and this plant at least $300,000 this year, and quite likely as much as $400,000. Three hundred thousand dollars would be 6 per cent on the entire amount that Mr. Ford is to pay us.

Mr. FIELDS. This item of expense you refer to covers not only maintenance but the upkeep, repair, etc., of the plant.

Secretary WEEKS. The lease is made in such form that the lessor agrees to maintain the plant in as good condition as it was received.

Mr. FIELDS. Will this cost of maintenance materially increase within a few years by reason of deterioration?

Secretary WEEKS. Undoubtedly there will be some expense every year in the maintenance of those plants.

Mr. FIELDS. I have heard it stated that the entire roof of the buildings, which is a very considerable item, would have to be replaced within 10 years.

Secretary WEEKS. I do not think that is so. There have been more foolish things said, pro and con, in reference to Muscle Shoals than in reference to any other matter I have ever investigated.

Mr. FIELDS. If my memory serves me correctly, I saw somewhere in House Document 167, that if this plant is maintained in a stand-by condition it will practically all have to be replaced in 20 years, because of deterioration and obsolescence.

Secretary WEEKS. I would not attempt to answer that question. I should refer that question to the Chief of Engineers.

Mr. FIELDS. Mr. Secretary, I would like to ask at this point whether Mr. Ford submitted this proposition upon his own volition or at the request of the War Department, that is, the original proposition?

Secretary WEEKS. This proposal evidently came in reply to a letter written by the Chief of Engineers to a great many companies asking if they were interested in taking up this proposition.

Mr. FIELDS. Will you put in the hearings at this point a copy of that letter?

Secretary WEEKS. Yes.

(The letter referred to is on page 99.)

Mr. FIELDS. Was this same letter sent to many individuals or firms throughout the country? I assume it was.

Secretary WEEKS. Yes.

Mr. FIELDS. Had you received other definite proposals to lease, or lease and purchase together this property, prior to the date you forwarded to Congress Mr. Ford's proposition?

Secretary WEEKS. Yes; I have had five different propositions at different times.

Mr. FIELDS. They were possibly not as favorable as Mr. Ford's, or they would have been sent along?

Secretary WEEKS. They were not as favorable up to the time Mr. Ford's offer was sent here. I have two on hand now, one of which I intend to send here so that the committee may have the information which it furnishes.

Mr. FIELDS. I notice this has been referred to before, Mr. Secretary, but I desire to turn to it in connection with a question that Mr. Wurzbach discussed in reference to paragraph 19 of the contract. If Mr. Ford immediately proceeds to install a plant, or organize a company there at an expense of some $10,000,000, which it has been suggested it contemplated——

Secretary WEEKS (interposing). I do not know that Mr. Ford—that is, Mr. Ford in his discussions with me declined to guarantee to put in any amount of money, so that that statement ought to be modified to that extent.

Mr. FIELDS. In the event that should be done, it would, as far as the company itself is concerned, put a very strong guaranty behind this agreement with the Government, would it not?

Secretary WEEKS. The company may not have any responsibility at all.

Mr. FIELDS. As Mr. Wurzbach called attention to, Mr. Ford binds himself and his heirs and assigns, and for the present, or during his life, that would be a pretty strong guaranty behind any agreement that he makes with the Government, would it not?

Secretary WEEKS. It would be, except that you have got to proceed against them for damages, and to prove damages in a matter of that kind, would be very difficult.

Mr. FIELDS. Suppose, just by way of comparison, that after this contract is made, for some reason, the appropriating powers should delay or ultimately decide not to make an appropriation. What would his relief be?

Secretary WEEKS. This would be an agreement signed by somebody authorized by Congress, and I hope the time has not come when this Government is going to violate an agreement with a citizen.

Mr. FIELDS. I hope so, too; but sometimes appropriations have been materially delayed, and that thought came to my mind in passing.

Secretary WEEKS. It might be.

Mr. FIELDS. I notice on the same page, page 10, you recommend a 50-year lease instead of a 100-year lease. Is it not a fact, Mr. Secretary, that you find that all franchises that have been granted up to this time for smaller concerns are more than 50 years' duration?

Secretary WEEKS. I have not that information, but the policy of the Government now is for 50-year leases, and I think that is a long-enough duration.

Mr. FIELDS. As a business man would you not determine the proper length of a franchise, to some extent, by the magnitude of the proposition, as it would be harder to finance a larger proposition than a smaller one?

Secretary WEEKS. But we can not tell anything about what is going to happen in this country in a hundred years. Every conceivable change may develop in a very much shorter time than that, and I do not think it is prudent as a matter of public policy to enter into contracts that run for longer than 50 years.

Mr. FIELDS. I observe further that you recommend that this agreement should provide that he shall operate under the Federal water power act, or the Alabama public service act. Is it not a fact that as soon as he would begin operations in the State of Alabama, by reason of their public service statute there, he would automatically become subject to that statute?

Secretary WEEKS. That might be a controverted question. The Ford engineers thought that would be true. But if that is so, why not put it in the agreement?

Mr. FIELDS. At this point I desire to insert in the hearing the pertinent parts of the Alabama public service statute; that is, the parts relating to this matter.

The CHAIRMAN. We have put the statute in the record.

Mr. FIELDS. We have not put in the Alabama law. I ask to insert the pertinent parts of the Alabama statute, Mr. Chairman.

The CHAIRMAN. If there is no objection, that will be done.

(Sections of the Alabama public utility act, approved October 1, 1920, governing the operation of electric power companies in Alabama, are as follows:)

"SEC. 2. * * * *Utility.*—Unless otherwise specified, the term 'utility,' when used in this act, shall mean and include every person, not engaged solely in interstate business, that now or may hereafter own, operate, lease, or control (1) any plant, property, or facility for the transportation or conveyance of or for the public of passengers or property by street or interurban railway; (2) any plant, property, or facility for the generation, transmission, or distribution, sale, or furnishing to or for the public of electricity for light, heat, or power or other uses, including any conduits, ducts, or other devices, materials, apparatus, or property for containing, holding, or carrying conductors used or to be used for the transmission of electricity for light, heat, or power or other uses; (3) any plant, property, or facility for the manufacture, storage, distribution, sale, or furnishing to or for the public of natural or manufactured gas for light, heat, or power or other uses; (4) any plant, property, or facility for the supply, storage, distribution, or furnishing to or for the public of water for manufacturing, municipal, domestic, or other uses; (5) any plant, property, or facility for the production, transmission, conveyance, delivery, or furnishing to or for the public of steam for heat or power or other uses; (6) any public wharf, dock, or terminal; (7) any toll bridge, ferry, or road; (8) any boat line propelled by any power and not regulated by the laws of this State heretofore or hereafter enacted as a steamboat or steam packet line. Unless otherwise specified, the term 'utility' shall also mean and include two or more utilities rendering joint service.

"*Rate.*—Unless otherwise specified, the term 'rate,' when used in this act, shall mean and include, in plural number as well as in the singular, every individual or joint rate, classification, fare, toll, charge, or other compensation for service rendered, or to be rendered, by any utility, and every rule, regulation, practice, act, requirement, or privilege in any way relating to such rate, fare, toll, charge, or other compensation, and any schedule or tariff, or part of a schedule or tariff thereof.

"*Service regulation.*—Unless otherwise specified, the term 'service regulation' shall mean and include every rule, regulation, practice, act, or requirement in any way relating to the service or facilities of a utility including the voltage of electricity, the heat units, pressure and candlepower of gas, the purity and pressure of water, and, in general, the quality of any commodity, service, or product supplied.

"SEC. 14. *Valuation of the property of a utility by the commission.*—The commission may, upon its own motion, at any time, and upon reasonable notice to any utility, when the commission deems it necessary to ascertain the value of the property of such utility, proceed to investigate, ascertain, and report the value thereof, and shall make such investigation, ascertainment, and report upon the request and application of any utility. To enable the commission to make such investigation and report, if upon its own motion it is authorized to employ such experts and other assistants as it may deem necessary. If such investigation and report be made upon the application of a utility, the same shall be made and the experts and assistants employed by the commission for that purpose shall be employed at the expense of the utility making such application. The commission may appoint examiners who shall have the power to administer oaths, examine witnesses, and take testimony in connection with any such investigation.

"In arriving at a valuation of the property of any utility as provided in this section, the commission shall give due consideration to the history and development of the utility and its property, original cost, cost of reproduction as a going concern, and other elements of value recognized by the law of the land for rate-making purposes. For the purpose of making such investigation, the members of the commission and its duly authorized agents and employees shall at all reasonable times have free access to the property, accounts, records, and memoranda of the utility whose property and rights are being valued, and it shall be the duty of such utility to aid and cooperate with the commission and its duly authorized agents and employees to the fullest degree for the purpose of facilitating such investigation. Upon the completion of the valuation of any utility, as herein provided, the commission shall thereafter keep itself informed of all extensions and improvements or other changes in the condition and values of the property of such utility and shall ascertain the value thereof, and shall from time to time revise and correct its valuation to the extent that may be necessary by reason of such extensions and improvements or other changes in the physical condition and resulting value of such property; and to this end every utility shall make such report and furnish such information as the commission may require.

"SEC. 17. *Supervision and regulation of utilities.*—The commission shall have general and exclusive power and jurisdiction to regulate and supervise every utility in respect

to its rates and service regulations and in respect of its franchises, licenses, and contracts in so far as they affect its rates and service regulations, and in respect to its financing and securities in accordance with the provisions and subject to the reservations of this act, and to do all things necessary and convenient in the exercise of such power and jurisdiction. Nothing in this act contained, however, shall be deemed to confer upon the commission power and jurisdiction to regulate and supervise in respect of rates and service regulations any utility owned and operated by any municipal corporation in the State. From time to time the commission may make such recommendations to any municipal corporation which owns and operates a utility as from its experience in the administration of this act may seem to the commission necessary or advisable.

"SEC. 23. *Operation, rates, etc.*—Every utility shall maintain its plants, facilities, and equipment in good operating condition and shall set up and maintain proper reserves for renewals, replacements, and reasonable contingencies. Every utility shall render adequate service to the public and shall make such reasonable improvements, extensions, and enlargements of its plants, facilities, and equipment as may be necessary to meet the growth and demand of territory which it is under the duty to serve. The rates and charges for the services rendered and required shall be reasonable and just to both the utility and the public.

"SEC. 25. *Schedules and contracts to be filed.*—Every utility shall file with the commission within 60 days from the going into effect of this act schedules showing all rates and service regulations in force for any services performed by it within the State; copies of all contracts embodying rates or service regulations which have not been approved by the commission or which are not in general operation shall likewise be filed.

"SEC. 32. *Commission may make orders.*—Whenever, after investigation in accordance with the provisions of this act, the commission shall be of the opinion that any provision or requirement of this act, or any order of the commission is being, has been, or is about to be violated, or may make and enter of record an order in the premises, specifying the actual or proposed acts or omission to act which constitute such real or proposed violation and requiring that such violation be discontinued or rectified, or both, or that it be prevented. No order, however, shall be made by the commission affecting any rate or service except as otherwise specifically provided, unless or until a public hearing has been held in accordance with the provisions of this act.

"SEC. 33. *Unlawful rates.*—It shall be unlawful except as herein otherwise provided for any utility to charge, demand, collect, or receive a greater or less rate for any service performed by it within the State or for any service in connection therewith that is specified in such schedule of rates and service regulations as may at the time be in force, or to demand, collect, or receive any rate not specified in such schedule of rates and service regulation. The rates and service regulations specified in such schedules shall be the lawful rates and service regulations until the same are changed as provided in this act; nor shall any person, except as herein otherwise provided, receive or accept any service from a utility for a rate greater or less than that prescribed in such schedules.

"SEC. 35. *Standards of service.*—That commission may prescribe adequate standards of service rendered or to be rendered by any utility, and may prescribe regulations for the examination and testing of such service and for the measurement thereof."

Secretary WEEKS. I want to suggest, Mr. Chairman, that there will be very considerable difference of opinion about whether the Alabama Public Service Commission or the Federal Water Power Commission has jurisdiction over a matter of this kind in the Tennessee River.

The CHAIRMAN. It might be well for the purpose of this committee to have both the laws before the committee when we consider the matter.

Secretary WEEKS. Very well.

Mr. FIELDS. Mr. Secretary, I believe it was stated in your letter that the Air Nitrates Corporation claimed to have a contract with the Government for some of this property proposed to be purchased by Mr. Ford.

Secretary WEEKS. Yes, they had.

Mr. FIELDS. What is your opinion, if you care to state it, as to the attitude of this corporation toward the completion of Dam No. 2 or the operation of nitrate plant No. 2?

Secretary WEEKS. I do not know about that, but their attitude is that they expect to have this property offered to them at the price the Government is willing to sell it for to anyone else.

Mr. FIELDS. I desire to state at this point, Mr. Chairman, for the benefit of the officers who will appear later, that I shall ask for the correspondence with Mr. W. D. Duke, I think the president of the Air Nitrates Corporation, with regard to nitrate plant No. 2.

The CHAIRMAN. That is for the benefit of the Chief of Ordnance, the Chief of Engineers, and the Acting Judge Advocate General?

Mr. FIELDS. Yes.

The CHAIRMAN. I hope those officers will kindly take notice of your statement.

Mr. QUIN. Mr. Secretary, is there anything in the language of the proposition of Mr. Ford that would indicate that he would not pay for the cost of acquiring the land and the flowage rights?

Secretary WEEKS. He does not intend to; he states to me he does not intend to and would not agree to do it.

Mr. QUIN. He could not of his own accord acquire that property under condemnation proceedings; that would have to be done by the Federal Government.

Secretary WEEKS. Probably.

Mr. QUIN. Then, as a legal proposition, the only way to acquire that land and the flowage rights is by condemnation proceedings on the part of the Federal Government, provided the people who own them will not sell them.

Secretary WEEKS. I do not think the question is so much the matter of acquiring the property; it is the question of who is going to pay for it.

Mr. QUIN. You say that it will cost at least a million and a half dollars?

Secretary WEEKS. That is what Mr. Ford's engineers believe it might be. The Government engineers say about $2,000,000.

Mr. QUIN. When was the contract or lease made with the Alabama Power Co.?

Secretary WEEKS. On plant No. 2?

Mr. QUIN. Yes.

Secretary WEEKS. That was made last November.

Mr. QUIN. 1921?

Secretary WEEKS. Yes.

Mr. QUIN. For a five-year period?

Secretary WEEKS. For one year.

Mr. QUIN. Mr. Ford did agree to bind himself and his heirs and assigns to carry out this contract in the proposal which he submitted, did he not?

Secretary WEEKS. You can read the language; as far as his statement is concerned, he does.

Mr. QUIN. You spoke of a guaranty, and some gentleman asked you some question about the type of guaranty. What have you to say about that?

Secretary WEEKS. If he were to organize a company with a capital of between ten and fifteen million dollars, I think that might be considered one type of guaranty. But I have not any assurance that there is going to be any money behind the capital stock of this company which he is going to organize. Another form of guaranty would be a bond to carry this out. As this proposition now reads you have got to proceed against Mr. Ford or his estate for damages, in case they do not carry out the agreement.

Mr. QUIN. Would not the Government be bound to proceed in the same manner against any guarantor in the form of an indemnity company, or corporation you speak of?

Secretary WEEKS. You do not have to proceed in the courts against an indemnity company. They pay the indemnity.

Mr. QUIN. They do not just shell out the money. Do you not have to show liability?

Secretary WEEKS. Oh, yes.

Mr. QUIN. I beg to differ with you about these bonding companies. I have had some litigation with them and you have to sue them like you do anybody else.

Secretary WEEKS. That has not been my experience.

Mr. QUIN. Mr. Secretary, in the hearings of 1920 it was stated before this committee that the War Department had on hand 300,000 tons of nitrate. I do not know what it cost, but it is worth $40 a ton to-day, you state?

Secretary WEEKS. About that.

Mr. QUIN. In case that plant at Muscle Shoals were thoroughly equipped for operation, the War Department's representative stated before this committee that they could sell that nitrate.

Secretary WEEKS. We have sold 80,000 tons of it.

Mr. QUIN. With this plant turned over to Mr. Ford, could you sell 150,000 tons of the remainder? You would be safe in doing that, would you not?

Secretary WEEKS. The Chief of Ordnance tells me he thinks it would be safe to reduce the stocks to about 150,000 tons, which would be about 60,000 tons more that could be sold.

Mr. QUIN. You could sell 130,000 tons, approximately, altogether.

Secretary WEEKS. Yes, but only some 60,000 tons additional.

Mr. QUIN. That much money could be put on this dam to finish it, could it not, without any other draft on the Treasury?

Secretary WEEKS. Of course, if that money were obtained from any source and were appropriated by Congress, it could be used to build the dam.

Mr. QUIN. In the time mentioned by Mr. Ford, 100 years, he proposes to give that back to the Government; the Government does not give him any title to it, and he is giving it back to the Government at the expiration of that time, is he not?

Secretary WEEKS. The Government gets all the dams back.

Mr. QUIN. Does not the Government get back that land which he is paying $5,000,000 for?

Secretary WEEKS. No.

Mr. QUIN. What is that considered to be, a straight-out sale?

Secretary WEEKS. That is a straight-out sale.

Mr. QUIN. The dams themselves go back to the Government, with the preferred right in Ford or his company to make a new contract with the Government at the expiration of the lease?

Secretary WEEKS. Yes; the dams and the power plants.

Mr. QUIN. Mr. Secretary, what is the real objection to the lease being for 100 years?

Secretary WEEKS. I do not think it is good public policy in this developing period that we are going through to have a lease made for as long a period as 100 years.

Mr. QUIN. Granting all that to be true, this is an immense proposition in financing a plant, and it will take many millions of dollars.

Secretary WEEKS. The Government is furnishing that.

Mr. QUIN. That is true to the extent of building the dams, but in the operation of them the Government will not furnish that. What assurance will Mr. Ford have that he could finance them for so short a period as 50 years?

Secretary WEEKS. Simply drawing his check on the bank would finance him. He has got more cash in the bank than he will ever put into this enterprise.

Mr. QUIN. There is no doubt about Mr. Ford having financial backing to operate the plant successfully?

Secretary WEEKS. Undoubtedly.

Mr. QUIN. It is your idea that the lease ought to be made for 50 years, the Government to get a better proposal at the end of the 50 years?

Secretary WEEKS. Possibly so: yes.

Mr. QUIN. If this man, or the Ford Corporation, developed the fertilizer business there and the current business to carry such an enterprise across 600 or 700 miles, do you not think it would be reasonable to give him a lease for 100 years, if he could do that?

Secretary WEEKS. I do not think so.

Mr. QUIN. In view of the probability of the Government making a better contract at the end of 50 years, you think it is better to lose that now?

Secretary WEEKS. I am not in favor of the Government making any lease for 100 years?

Mr. QUIN. No kind of a lease?

Secretary WEEKS. No kind of a lease. However, I think I ought to add that I do not think that is vital to this offer.

Mr. QUIN. That is, the term of years?

Secretary WEEKS. No. I would not think it was vital at all.

Mr. QUIN. I believe Mr. Ford considers that a vital question.

Secretary WEEKS. I do not know why he should. The amortization of the indebtedness would be reduced from 100 to 50 years; the plant would not be paid for at the end of 50 years, but the Government would have its investment there and it would not make any difference to Mr. Ford.

Mr. QUIN. It would be paid for entirely at the end of 50 years, provided the Government got 4 per cent, and it costs $40,000,000 or $50,000,000 to build it?

Secretary WEEKS. It would take 97 years to accumulate the fund to retire $40,000,000 at 4 per cent.

Mr. QUIN. The loss you have on that plant now in actual deterioration amounts to more than the cost to the Government of maintaining it, annually?

Secretary WEEKS. On No. 2?

Mr. QUIN. Taken as a whole.

Secretary WEEKS. We do not know what the deterioration amounts to.

Mr. QUIN. The Government is put to a fixed cost in guarding it and looking after it.

Secretary WEEKS. Not while it is under lease.

Mr. QUIN. You have no expense at all during that time?

Secretary WEEKS. There is a lot of property around there. There is the property at the nitrate plant No. 1, which the Government had to look after, but the lessee takes care of the power plant while it is under lease.

Mr. QUIN. What I would like would be to have you give the difference between what the Government has to pay out every year and what it receives from these leases you mention. I would like to have that statement in the record.

Secretary WEEKS. As to the matter of dollars and cents, the Government is getting more out of those leases than it is spending there now.

Mr. QUIN. Of course; the normal deterioration is a big element in figuring the amount invested.

Secretary WEEKS. That is considerable, but we do not have to take that into consideration at the Warrior plant, because that is to be returned in as good condition as it was, and at power plant No. 2 the condition is the same. That is the only outside property we have to look after.

Mr. QUIN. The territory adjacent has phosphorus rock in it, has it not?

Secretary WEEKS. I have been told that there is some of that in Tennessee.

Mr. QUIN. About how many miles above this dam is phosphorus rock?

Secretary WEEKS. About 100 miles.

Mr. QUIN. If the river was navigable the phosphorus rock could be floated down in barges from the phosphorus beds to the plant at Muscle Shoals?

Secretary WEEKS. This is near the town or city of Columbia, which is on the Duck River, not far from Nashville, I think, and not on the Tennessee River at all, so the Tennessee River navigation would not apply to that.

Mr. QUIN. It would have to come in on other streams, if they could take it down on barges?

Secretary WEEKS. Yes.

Mr. QUIN. Mr. Secretary, I suppose that the contract which the Government has with these people who own the patents for the fixation of nitrogen is such that it could be transferred to Mr. Ford by the Government, or to his company?

Secretary WEEKS. I think there is a question about that, and I would like to have you ask that question of the Acting Judge Advocate General. I am not a lawyer, and I do not want to get into a legal discussion.

Mr. QUIN. I simply wanted to know whether the Government could carry out its contract with Mr. Ford, in case his offer is accepted.

Secretary WEEKS. Col. Hull can answer that question.

Mr. FISHER. Mr. Secretary, have we before us now all of the propositions you have for the purchase or transfer of Muscle Shoals that you have thought worthy of consideration?

Secretary WEEKS. I have another I am going to send to you in three or four days which I think the committee ought to have.

Mr. FISHER. May I ask how many propositions have been presented to the Secretary of War?

Secretary WEEKS. Five in all.

Mr. FISHER. Would it be possible for the committee to have the advantage of having a copy of each one of those five propositions in the hearing?

Secretary WEEKS. Two of them have been withdrawn, so I do not think they are of any moment.

Mr. FISHER. That would leave three still pending.

Secretary WEEKS. Yes; Mr. Ford's and two others.

Mr. FISHER. Would you be kind enough to let the committee have copies of those before it, and put them in the record?

Secretary WEEKS. Yes. (These offers appear hereafter.)

Mr. FISHER. I notice on page 10 of your letter to the Speaker of the House you say, "If Mr. Ford's proposal be accepted by Congress, I suggest that there should be certain modifications made to safeguard the Government's interests. As heretofore stated, there should be some assurance that the contracts made by his proposed company will be carried out." I will ask you whether or not, in the negotiations that have been had between Mr. Ford and the War Department since last July, such suggestions in reference to the proposed assurance have been made by the War Department to Mr. Ford or his representatives?

Secretary WEEKS. Frequently to him or to his representatives.

Mr. FISHER. They were not included in the last draft presented by Mr. Ford?

Secretary WEEKS. Mr. Ford declines to guarantee anything whatever, but he put in paragraph 19, which you are familiar with.

Mr. FISHER. In the other propositions that have been presented are there any more assurances than in the Ford proposition?

Secretary WEEKS. They are in very different form.

Mr. FISHER. They are different propositions altogether?

Secretary WEEKS. Yes.

Mr. FISHER. I would like to know whether or not the War Department has to-day a plant for nitrate preparedness which is comparable to the provisions of section 16 of

the Ford offer, which provides for the turning over upon five days' notice in time of war of the entire facilities of nitrate plant No. 2, with the personnel, and the keeping up for 100 years of an adequate and efficient laboratory for the use of our Army officers?

Secretary WEEKS. No.

Mr. FISHER. In the estimate that has been made by the War Department as to the salvage value, shown on page 22, the salvage value of No. 2 is shown to be a little over $7,000,000. I would like to know whether or not the offer of Mr. Ford, if accepted, tendering to the Government at all times a magnificently equipped nitrate-producing plant, would be worth more than $7,000,000, the tender running for 100 years, or tendering it to the Government in the event of war.

Secretary WEEKS. That is of material value, of course.

Mr. FISHER. I would like to ask you whether or not it is not an asset for national preparedness such as we had never hoped for before.

Secretary WEEKS. I do not want to admit that.

Mr. FISHER. That we had planned for even with the money that would be appropriated by Congress.

Secretary WEEKS. I believe that in 20 years there will be a large number of plants in the United States producing nitrates; that it is going to be a very common process.

Mr. FISHER. But the proposal as offered in paragraph 16 is a magnificent one as it stands to-day, with the present financial condition of our Government?

Secretary WEEKS. I do not know that I would agree with your adjective, but with your sentiment I do agree.

Mr. FISHER. I would like to know whether or not the War Department has any plan for the utilization of these plants so that chemicals could be manufactured or produced to be used in the making of cheap fertilizers. Has the War Department now a plan for the utilization of the Muscle Shoals plant for the production of chemicals which could be used in the manufacture of cheap fertilizers?

Secretary WEEKS. I think you had better ask Gen. Williams that question.

Mr. FISHER. I would like to ask you this question: In the event the Ford offer is not accepted, is it the attitude of the War Department now that a recommendation will be made to Congress to complete the Wilson Dam?

Secretary WEEKS. I would make that recommendation.

Mr. FISHER. Would that recommendation carry with it anything further than the production of power?

Secretary WEEKS. No.

Mr. FISHER. So, as far as the outlook for the production of chemicals for the manufacture of cheaper fertilizer is concerned, no plan has been made for that?

Secretary WEEKS. I ought to modify that answer, that unless we could use, by lease or otherwise, the plant we have there for that purpose. Of course, the Government will retain that plant for its own requirements. At present at least the Government will do that, and it will make use of its property wherever it may be without affecting its ultimate use for governmental purposes.

Mr. FISHER. The present plan would be to retain it in a stand-by condition?

Secretary WEEKS. Yes.

Mr. FISHER. Is the condition of a plant like nitrate plant No. 2 as favorable as it would be if it were maintained under section 16 of Mr. Ford's offer? Is a plant in stand-by condition as effective or efficient as one operated with personnel, as described in section 16?

Secretary WEEKS. I would not undertake to say that we could get enough for it to entirely provide for the maintenance of the plant. In some years we might and in some years we might not. I do not know.

Mr. FISHER. I judge from your answers that the War Department is working on a proposal for the utilization of No. 2 other than in a stand-by condition.

Secretary WEEKS. Perhaps there is nothing definite because it is a matter which has been before the department for six months. If this is accepted, there is no reason why the War Department should work on other plans.

Mr. FISHER. Something has been said relative to an option which has been retained by two companies which had had contracts with the Government. Do you consider that there is any moral obligation to defer everything because of that option, which has been declared illegal?

Secretary WEEKS. Undoubtedly a Government board gave the option and it is charged in the legal opinion that that board had no right to do it. I leave it to you to make up your own mind what the Government ought to do under those circumstances.

Mr. FISHER. Did the Government draft the agreement, or did these two corporations draft the agreement, that was finally entered into?

Secretary WEEKS. I do not know about that.

Mr. WRIGHT. Mr. Secretary, there is no dam No. 1?

Secretary WEEKS. There is no dam No. 1 in this proposition. That is a navigation project.

Mr. WRIGHT. It is very small dam, is it not, that is contemplated, about 6 feet high?

Secretary WEEKS. I do not know the exact height, but it is a small dam and, compared with the total expenditures, it is not of great importance in regard to cost.

Mr. WRIGHT. A good deal has been said of the salvage value, and it has been estimated from $8,000,000 to $16,000,000. That would include the salvage of nitrate plant No. 2?

Secretary WEEKS. Yes.

Mr. WRIGHT. That is one project the department does not feel it should let go?

Secretary WEEKS. No; we would not do that under present conditions.

Mr. WRIGHT. It should be maintained and retained?

Secretary WEEKS. Under present conditions.

Mr. WRIGHT. I believe you said this morning that Dam No. 3 would not be necessary except for the fertilizer proposition.

Secretary WEEKS. Except for Mr. Ford's requirements.

Mr. WRIGHT. It would be a fertilizer proposition and also a navigation proposition?

Secretary WEEKS. I do not mean to answer that in the affirmative, because presumably Mr. Ford is going to use a large quantity of his power for some other purpose than manufacturing fertilizer. Whether he is going to construct some manufacturing enterprises there or sell the power, I do not know; I am not in his confidence on that.

Mr. WRIGHT. From the present outlook it would seem that the fertilizer proposition would make necessary the construction of Dam No. 3.

Secretary WEEKS. I do not believe that is necessarily so. Dam No. 2 would furnish all the power that would be used for the manufacture of fertilizer.

Mr. WRIGHT. Of course this whole project is primarily essentially one for the War Department for the purpose of producing explosives? That is the primary essential object?

Secretary WEEKS. That was the original purpose.

Mr. WRIGHT. Of course it is still the purpose of the War Department, if it is to be retained, that it should be retained for that purpose.

Secretary WEEKS. Yes, it will be retained at present; as I have stated, or did state before, I believe within a limited number of years there will be a great amount of fixation of nitrogen so that the question of the Government's maintaining a plant for that purpose may not be necessary.

Mr. WRIGHT. The fertilizer proposition is simply incidental and secondary, and always was, I presume.

Secretary WEEKS. The fertilizer proposition is apparently new.

Mr. WRIGHT. It is incidental to the real, primary object of the plant?

Secretary WEEKS. Yes.

Mr. WRIGHT. Of course, the object at first was to make explosives in war time and a sufficient quantity in peace time, and incidentally to use the power there for such manufacture of fertilizer as could be done?

Secretary WEEKS. That is the pending proposition.

Mr. WRIGHT. That was always the thought, was it not?

Secretary WEEKS. I do not know that it was; I am comparatively new in this matter. Just how far back the fertilizer part of it goes, I do not know.

Mr. WRIGHT. It was put in the law which authorized the construction.

Secretary WEEKS. Quite likely.

Mr. WRIGHT. You have made a very careful study of this Ford offer.

Secretary WEEKS. I have spent some time on it.

Mr. WRIGHT. For the benefit of the committee, would you mind giving us the advantage of some of the thoughts you have bestowed on it by telling us your estimate of the advantages which would accrue to the Government if the Ford offer is accepted, and then tell us of the disadvantages?

Secretary WEEKS. I tried to do that in the comments which I made to Congress.

Mr. WRIGHT. I suppose we have read that several times, but it is so much different from reading it to hear it spoken.

Secretary WEEKS. I do not know that I want to materially change that.

Mr. WRIGHT. I think, if you will permit me, you made a very elaborate and succinct report on that whole proposition. The first advantage would be that this plant would be maintained in an up-to-date condition so that explosives can be manufactured at any time the Government might require?

Secretary WEEKS. Yes.

Mr. WRIGHT. That is the big thing.

Secretary WEEKS. From the Government standpoint.

Mr. WRIGHT. Then incidentally it might develop a great quantity of cheap fertilizer could be produced there.

Secretary WEEKS. There is the sticking point. If anybody could convince me to a certainty that there could be a large amount of fertilizer produced I should feel much more enthusiastic about Mr. Ford's offer than I do now. But I have not sufficient evidence that that can be done, and, incidentally, I do not believe Mr. Ford, or his engineers, know whether it can be done.

Mr. WRIGHT. You regard that as in the experimental stage?

Secretary WEEKS. I do; in fact Mr. Ford put it into his offer that he would experiment on the manufacture of fertilizer.

Mr. WRIGHT. Perhaps subparagraph A of paragraph was inserted with that very idea in mind. It says:

"To determine by research whether by means of the electric furnace method and industrial chemistry there may be produced on a commercial scale fertilizer compounds of higher grade and at lower prices than fertilizer using farmers have in the past been able to obtain, and to determine whether in a broad way the application of electricity and industrial chemistry may accomplish for the agricultural industry of the country what they have economically accomplished for other industries."

Secretary WEEKS. Mr. Ford undoubtedly believes there are going to be great developments along those lines, and undoubtedly he took Mr. Edison down there to get his judgment on that subject. Just how valuable the judgment of either of them is I would not undertake to say, but it would be a very bold man who would be willing to say there was not going to be any development in chemistry along those lines, and Mr. Ford may work out something of great benefit.

Mr. WRIGHT. That is why I have called attention to subparagraph A. He obligates himself to make those experiments.

Secretary WEEKS. Yes; but the very fact that he calls them experiments would indicate that he is not certain about it.

Mr. WRIGHT. Do you happen to know what Mr. Edison's views are on that matter?

Secretary WEEKS. I have never talked to him about it. I know what his views are about paying for the property.

Mr. WRIGHT. Does he think it is worth anything?

Secretary WEEKS. I refer to the manner of paying for it.

Mr. WRIGHT. Mr. Miller propounded quite a number of questions about this matter, and the trend of his questions would indicate perhaps it would be a good idea to donate the property to Mr. Ford.

Mr. MILLER. I made no suggestion of that character.

Secretary WEEKS. I think Mr. Miller meant that the Government was not going to get very much out of the $5,000,000 Mr. Ford was going to pay.

Mr. WRIGHT. $5,000,000 sounds very small in comparison with the many billions of dollars the Government has spent; but is not this like the Government money spent on other war projects? It is a question of whether having passed over the wheel it is not already lost.

Secretary WEEKS. Most of this was lost.

Mr. WRIGHT. You are striving to get the most out of it for the Government and utilize it in the best way for the Government and the people?

Secretary WEEKS. Yes.

Mr. WRIGHT. And incidentally there might grow out of the Ford offer quite a development in four or five States around there?

Secretary WEEKS. That is possible; I have had that in mind.

Mr. WRIGHT. Do you share in common with some of us the thought that whatever Henry Ford touches is like magic, and it is a go from the very start?

Secretary WEEKS. I do not know of any of Mr. Ford's activities that have been magical except his car.

Mr. WRIGHT. I believe he took over a railroad and is now operating that railroad so profitably that he wants to reduce the rates and the Interstate Commerce Commission will not let him do it.

Secretary WEEKS. I have not analyzed the figures.

Mr. WRIGHT. In addition, Mr. Secretary, the question of navigation of the Tennessee River would be very material, would it not?

Secretary WEEKS. You want my absolute opinion on that?

Mr. WRIGHT. Yes.

Secretary WEEKS. I would not advise the development of the Tennessee River at Muscle Shoals for navigation purposes; that is, I would not appropriate the money this year.

Mr. WRIGHT. I speak of this as an incident that would grow out of the development.

Secretary WEEKS. If it were not for the building of the dam development for navigation this perhaps would cost much more.

Mr. WRIGHT. Following the construction of the dams will come navigation on the river.

Secretary WEEKS. With the probability that at some time the river will be improved for navigation at this locality it is necessary to put the locks in at the time the dams are constructed, so I am entirely in favor of doing that.

Mr. WRIGHT. It is simply independent of the project?

Mr. STOLL. Referring again to the guarantees, the Government has made some leases to private concerns of certain water powers, has it not?

Secretary WEEKS. All I know about that is this: I am chairman of the Federal Water Power Commission now, and the Water Power Commission is acting under the provisions of the water power act, and those leases and permits are limited to 50 years.

Mr. STOLL. Are there any guarantees there by the lessees to the Government?

Secretary WEEKS. They furnish their own money.

Mr. STOLL. But they take over Government property.

Secretary WEEKS. They are granted a permit on a navigable stream to build a dam, for example, and they build the dam with their own money. The Government has nothing to do with financing those propositions and the permit only continues for 50 years.

Mr. STOLL. In regard to the 50-year period, if the Ford offer should prove satisfactory in every respect except the 50-year period, do you think that is sufficiently wrong in principle to warrant the discrediting of the Ford offer?

Secretary WEEKS. If it was satisfactory in all respects, so far as Congress is concerned, I should say not.

Mr. STOLL. You mean that the 50-year period would not be considered, but that you would let it go at 100 years?

Secretary WEEKS. I would consider it to be my duty.

Mr. STOLL. You do not think it would warrant rejecting the offer if it is satisfactory in other respects?

Secretary WEEKS. I do not think so.

Mr. STOLL. From the standpoint of the Government, which is better, the Ford offer or the salvaging of Muscle Shoals?

Secretary WEEKS. I wish I could answer that question with great frankness and certainty. But I can not with certainty. I believe that a sale of the Warrior plant and the properties in that neighborhood can be made for more than the Ford offer is paying for all that property. I believe that can be done. I believe that the Wilson Dam can be completed without taking a dollar out of the Treasury of the United States.

Mr. STOLL. I do not mean that. The Ford offer contains certain specific things, including the maintaining of the plant for the benefit of the Government and the manufacture of fertilizer for the benefit of the farmers. I am taking the Ford offer as it stands. Which is better from the standpoint of the Government, to accept that offer or to salvage Muscle Shoals?

Secretary WEEKS. The Government is not going to salvage plant No. 2, and the whole essence of Mr. Ford's offer is, in my judgment, whether people are going to get fertilizer at lower cost than heretofore. If that phase of the offer were eliminated, I think quite as advantageous disposition could be made of this property as Mr. Ford's offer.

Mr. STOLL. Are you familiar with the fertilizer proposition? There was about 7,000,000 tons used in the United States in 1920, I think. What per cent of nitrate is in that fertilizer—about 3 per cent, is there not?

Secretary WEEKS. There are all kinds of fertilizer.

Mr. STOLL. I know; but the usual fertilizer is 3 per cent nitrate, is it not?

Secretary WEEKS. I am a farmer, and when I want to buy fertilizer, I send soil to a chemist for an analysis and I buy fertilizer that fits the soil.

Mr. STOLL. Is it not a fact that the average fertilizer which a farmer uses has about 3 per cent of nitrate in it?

Secretary WEEKS. I do not know that.

Mr. STOLL. That is my information.

Mr. GARRETT. Mr. Secretary, Mr. Stoll and other members of the committee have covered very well practically all the questions I wanted to ask you. If I understood your answer to a question by Mr. Crago it was that while you had certain objections to this lease you had pointed out in your communication to the Speaker of the House, you were willing to say that if you were convinced in your own mind, as a matter of fact, Mr. Ford could manufacture, or would manufacture, fertilizer at this location in such proportion that it would materially reduce the price of fertilizer to the consuming public you would then favor this proposition?

Secretary WEEKS. That is in substance what I said. However, that is a pretty important question, and I want to have the privilege of revising that answer, putting it in just the form I would like to have it. I do not want to have somebody else put phraseology in my mouth.

Mr. GARRETT. I am not attempting to do that.

Secretary WEEKS. I know you are not.

Mr. GARRETT. I understood you to say that in your opinion, from the facts, the matter would have to appeal to each Member of Congress when the whole record was presented as to whether Mr. Ford could materially reduce the price of fertilizer to the consuming public by taking over this plant under certain terms and conditions as shown in the evidence before the committee.

Secretary WEEKS. Getting a lease for 100 years?

Mr. GARRETT. Yes. Do you consider his contract is so hedged about with provisions that he would be required to produce fertilizer to the capacity mentioned in his contract for the period of the time mentioned?

Secretary WEEKS. I do not think so.

Mr. GARRETT. Then you want that part of it strengthened?

Secretary WEEKS. I do; and lest I may be accused of not giving Mr. Ford the intention of good purposes in carrying out his proposition, I want to say, if Mr. Ford said he would see that it was done, as long as he lived it would be done.

Mr. GARRETT. In a proposition of this kind we have to have it so framed and drawn that it will be done after the man who made it is dead and gone?

Secretary WEEKS. Yes; we are here providing something for our great-grandchildren.

Mr. GARRETT. I think we should hedge it about with every precaution and restriction to bring the desired results to future generations. But these 110,000 tons of nitrate of ammonia that his contract calls for would be a component part of about 3,000,000 tons if made up into fertilizer, as commonly used by the farmer, would it not?

Secretary WEEKS. I can not answer that question.

The CHAIRMAN. This Muscle Shoals plant originated under a provision of the national defense act, passed in 1916, I think on June 3, 1916, was it not? That was provided for in section 124 of that act, was it not?

Secretary WEEKS. The correct answer to that question applies to No. 1 plant, not to No. 2.

The CHAIRMAN. Were not all the plants started as a result of that legislation, covering the development of the Muscle Shoals plant, as provided in section 124?

Secretary WEEKS. I think not. I have a copy of a letter from President Wilson to the Secretary of War, dated February 23, 1918, which refers to his wishes regarding the setting aside of money to construct plant No. 2.

The CHAIRMAN. I think we appropriated in that act $20,000,000.

Secretary WEEKS. I will read this letter:

THE WHITE HOUSE,
Washington, February 23, 1918.

MY DEAR MR. SECRETARY: I refer to section 124 of the national defense act of June 3, 1916, authorizing the President to determine the best means and adopt the most advantageous projects for the production of nitrates, and appropriating the sum of $20,000,000 for that purpose. Of this appropriation, I am advised that there is an available unallotted balance of $13,785,000.

The completion of Dam and Power House No. 2, at the Muscle Shoals on the Tennessee River, as designed and projected by your department, is, in my judgment, of vital importance in accomplishing the purpose of the law. I should be pleased, therefore, to have you allot to that work all of the aforesaid balance, after deducting the sum of $400,000, which I understand will be required for the purchase of land required in connection with another project.

Cordially and faithfully, yours,

WOODROW WILSON.

Hon. NEWTON D. BAKER,
Secretary of War.

The CHAIRMAN. That shows that Muscle Shoals was originally provided for under that section of the national defense act.

Secretary WEEKS. I am informed, Mr. Chairman, that this money applies to dam No. 2, and not the nitrate plant.

The CHAIRMAN. What money went into the nitrate plant? Or, if I may broaden the question somewhat, what funds were called upon to complete, so far as they have been completed, these various projects?

Secretary WEEKS. The money to construct the nitrate plants was provided in the fortifications act.

The CHAIRMAN. A military proposition?

Secretary WEEKS. Yes.

The CHAIRMAN. This whole proposition was a military proposition?

Secretary WEEKS. Fundamentally, undoubtedly.

The CHAIRMAN. And the purpose is primarily to furnish explosives for the Government?

Secretary WEEKS. I think probably that is a correct statement of the primary purpose.

The CHAIRMAN. And Mr. Ford promises that he will keep alive permanently and improve, if necessary, nitrate plant No. 2 and turn it over to the Government for the making of explosives any time the Government wants it?

Secretary WEEKS. I think this will be a correct answer to your original inquiry that the nitrate money was spent to purchase the land at No. 1 plant, but the money to construct both No. 1 and No. 2 came from the fortifications act. If that is not correct I will have further investigations made, and I will have the correct answer put in the record.

The CHAIRMAN. At any rate, that money was taken from a military source; that is the fact, is it not?

Secretary WEEKS. Undoubtedly, if it came from the fortifications act it was appropriated for a military purpose.

The CHAIRMAN. I want to say frankly to you that there is some question of the jurisdiction of this committee being raised, and I am asking these questions to show that it was a military proposition right from the beginning. Mr. Ford's offer sets out very clearly that he is willing to do with nitrate plant No. 2 for the purpose of making explosives during the term of the lease, does it not?

Secretary WEEKS. Yes.

The CHAIRMAN. So in your opinion the desire to keep up the maintenance of a factory that will produce explosives for the Army in this country is one of the primary objects of this proposition?

Secretary WEEKS. It was a primary object, and is of importance now; but I think will lessen in importance as the years go by.

The CHAIRMAN. Of course, the fewer wars we have the less important the use of powder will become; but at this time in the history of the country would you advise that we quit manufacturing explosives and just drift along as we have always done in our history?

Secretary WEEKS. We are not disturbed about the manufacture of explosives at this time, with the amount we have on hand.

The CHAIRMAN. I understand that situation, and that is a very important proposition in your mind at present?

Secretary WEEKS. The maintenance of this plant should be continued for Government purposes.

Mr. PARKER. Mr. Secretary, I omitted to ask you one question. Do you estimate on spending $22,000,000 in building Dam No. 2 if we do not accept the Ford offer?

Secretary WEEKS. I would do it.

Mr. PARKER. Did I understand you to say you do not think that money would have to be spent from the Treasury. Why do you say that?

Secretary WEEKS. I think arrangements can be made to produce that money through an issue of bonds.

Mr. PARKER. You would have to borrow the money from the Government?

Secretary WEEKS. Not from the Government either.

Mr. PARKER. Other people would produce it?

Secretary WEEKS. Other people would produce the money, in my opinion. Of course, Mr. Parker, you understand I have not any definite proposition that will sustain that opinion of mine.

Mr. PARKER. I did not mean to ask for one, but I wanted to ask you this question: As you can run the nitrate plant by steam, and do now, what object would you have in completing Dam No. 2?

Secretary WEEKS. You mean from the Government standpoint?

Mr. PARKER. From any standpoint.

Secretary WEEKS. I would complete Dam No. 2, because you have a foundation there, a splendid piece of work, and you can, in my opinion, develop power enough there to sell power.

Mr. PARKER. You would spend, you say, $22,000,000?

Secretary WEEKS. Twenty-two million dollars and probably more.

Mr. PARKER. It is then a commercial proposition to complete it for the sake of the power you can develop?

Secretary WEEKS. That is my judgment.

Mr. PARKER. With reference to the manufacture of these nitrates by the cyanamide process can not that be done wherever there are coke ovens, coal, and limestone?

Secretary WEEKS. It could be done.

Mr. PARKER. Is it not better to have it done where there are coal mines and coke ovens?

Secretary WEEKS. I think there is a large surplus of that material at this time.

Mr. PARKER. It is not made there, is it?

Secretary WEEKS. No.

Mr. PARKER. So that the manufacture is usually carried on where there are coke ovens, or where they have limestone in the neighborhood.

Secretary WEEKS. You must necessarily have power for the cyanamide process.

Mr. PARKER. Is there much power needed in that process?

Secretary WEEKS. A good deal of power, I understand.

Mr. PARKER. But if you are near a coal mine, the smallest coal is sometimes used

Secretary WEEKS. It can be.

Mr. PARKER. There is therefore no particular necessity for having this particular place for manufacturing large quantities of nitrate by the cyanamide process?

Secretary WEEKS. To manufacture successfully you need very cheap power. Of course, in time of war we would not pay much attention to the cost of power, but if that were to be used in time of peace it would be very desirable for the Government to have cheap power for the purpose.

Mr. PARKER. Do you know whether water power, on the whole, is cheaper than the power that can be gotten from coal, if you are close to coal mines?

Secretary WEEKS. It makes a vital difference where it is. There are cases where power can be developed from coal cheaper than almost any water power, and water powers are not the gold mines that many people imagine.

Mr. PARKER. And if they are at the coal mine where they can get coal cheaper, they can develop cheaper power than by water power.

Secretary WEEKS. I am told so.

Mr. HULL. My mind is not clear, Mr. Secretary, in regard to your idea as to completing this proposition. Just how is that to be done? If you issue bonds on it, it would require legislation, would it not?

Secretary WEEKS. If I had a definite proposition which I could put before the committee, I would do so, but I have not. The discussions I have had with various people lead me to the conclusion that water power can be developed at Dam No. 2, which will carry an issue of probably $25,000,000 bonds; that is to say, if the Government would give you that foundation and you could sell the power developed by that dam at what are normal prices in that vicinity you could probably float an issue of $20,000,000 or $25,000,000 in bonds to complete the dam.

Mr. HULL. I quite agree with you on that. Would it be possible to do the same thing with the Ford proposition?

Secretary WEEKS. You have it complicated with Dam No. 3, which is quite a different matter.

Mr. HULL. I just wanted your opinion of it.

Secretary WEEKS. It depends on what Mr. Ford is going to do with his power. If he were to manufacture aluminum and use the entire power for that purpose and he would allow a sufficient rate for the power you might do it. But I do not know what he is going to do with it.

Mr. HULL. If you decide to complete the proposition outside of the Ford matter, there would be practically no difference in the time of the completion of the dam, would there?

Secretary WEEKS. I think the dam can be completed under contract in 30 months.

Mr. HULL. In either case it would not make much difference whether it was for Ford or for the Government itself?

Secretary WEEKS. Except in the Ford proposition you will lose the interest on the cost of the completion of the dam for a considerable period.

Mr. HULL. In your opinion there would not be much difference in the cost, whether it was for Ford or for somebody else?

Secretary WEEKS. I do not think so.

Mr. HULL. You would be able to salvage it better as a completed project than you are at the present time?

Secretary WEEKS. I think so.

(Thereupon, at 4.50 o'clock p. m., the committee adjourned to meet to-morrow, Thursday, February 9, 1922, at 10.30 a. m.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Thursday, February 9, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. Gentlemen, I have received a telegram from Mr. Liebold in response to the telegram that I sent him and which was read at the hearing yesterday. It is as follows:

DETROIT, MICH., *January 8, 1922.*

Mr. JULIUS KAHN,
Chairman Committee on Military Affairs,
Washington, D. C.

Your telegram received. In view of the fact that Mr. Ford finds it impossible to come to Washington, we are asking Mr. J. W. Worthington to call on you and to be of such service as is possible.

E. G. LIEBOLD,
General Secretary to Henry Ford.

I want to say that this morning Mr. Worthington did call on me and said that Mr. Ford's representatives will be glad to answer any questions, but they are all very busy and will not be able to appear before the committee until next Monday. He has stated that Mr. Mayo, whose name appears in connection with the offer of Mr. Ford, I think as a witness——

Mr. FIELDS. May I state in that connection, Mr. Chairman, that I read in this morning's paper a statement given to the Associated Press in Detroit by Mr. Ford to the effect that while he is very busy, he would come in person if the committee thought it necessary to do so.

The CHAIRMAN. Mr. Worthington stated that they would be here at 10.30 o'clock Monday morning to answer any questions that the committee might desire to ask.

STATEMENT OF MAJ. GEN. C. C. WILLIAMS, CHIEF OF ORDNANCE, ACCOMPANIED BY MAJ. JAMES H. BURNS, ORDNANCE DEPARTMENT.

The CHAIRMAN. General, we are considering the offer of Henry Ford for the Muscle Shoals property. We understand that you have had considerable to do with the development of the plants there, and the committee would be very glad to hear you in connection with the work that has been done down there. Will you kindly proceed in your own way?

Gen. WILLIAMS. Mr. Chairman, the Muscle Shoals project or enterprise is very clearly divided into two entirely separate and distinct parts; one has to do with the water power development and the other has to do with the installation of two nitrate plants, together with certain auxiliaries that go with those plants in order to make them complete.

With the water power question the Ordnance Department has not now nor has it ever had anything to do. That comes entirely under the Chief of Engineers.

As to the nitrate plants at Muscle Shoals the Ordnance Department, of course, has started those plants, built them, and brought them to their present state of development. The main facts concerning these two plants are briefly about as follows:

The first plant to be started down there is the one that we call plant No. 1 located at Sheffield, Ala. The plant was constructed to fix nitrogen from the air in accordance with what is known as the Haber process. It was designed and built by the General Chemical Co., but in a vital part of the plant it failed to operate and never produced any appreciable quantity of product. We think, however, that by certain modifications in the part of the process in which the nitrogen gas is welded to the hydrogen gas to form ammonia, the plant could be made to operate successfully. As a matter of fact, the plant at Sheffield was designed by the engineers who have since

designed, along the same lines, a successful plant which has been installed at Syracuse N. Y., by the Solvay Process Co. They of course had considerable experience in the design and attempted operation of the plant at Sheffield. Then the Solvay Co. spent a year and a half or two years in research work concerning this particular phase of this process, and they finally installed the plant at Syracuse, which Maj. Burns and myself visited this past summer and found to be working very successfully. It looks very much as though the plant was a very considerable success; unusually so for a new thing of this kind.

The various figures concerning the cost of the installation of No. 1 nitrate plant, etc., are contained in a memorandum that the Ordnance Department submitted to the Secretary of War, and forms an appendix to the letter from the Secretary of War to the Speaker of the House of Representatives, dated February 1, 1922. I do not know whether the committee would care to go into those figures again or not.

The CHAIRMAN. I do not recall that they were gone into in detail, but they are set out on page 23 of the document.

Gen. WILLIAMS. Yes, sir; they are set out in detail on page 23.

The CHAIRMAN. And the whole letter was introduced in the hearing yesterday, so that that is already a part of the record.

Gen. WILLIAMS. Yes, sir. I can state briefly the figures, if you care to have me do so.

The total cost of this plant has been $12,887,941.31. The operation and maintenance of this plant to July 1, 1920, has cost $794,359.85, making a grand total of $13,682,301.16. This plant is included in the list of properties for which Mr. Ford proposes to pay the sum of $5,000,000.

The CHAIRMAN. What do you mean by operation of the plant at Sheffield.

Gen. WILLIAMS. I should have said attempted operation. We attempted to run the plant to see if it would produce the material it was designed to produce, and it did not produce it satisfactorily.

The CHAIRMAN. But that much was expended in your effort to make the plant work?

Gen. WILLIAMS. Yes, and in maintenance of the plant since.

The other and main plant at Muscle Shoals is what we call the nitrate plant No. 2. This plant was designed to fix nitrogen from the air by the cyanamid process, and the plant has a rated capacity of 110,000 tons of ammonium nitrate per year. The plant was completed sufficiently to start operating just a very short time before the armistice. We continued the operation of the plant for a sufficient length of time and to a sufficient extent to demonstrate that it would produce the ammonium nitrate in the quantities that it was designed to produce. The investment in nitrate plant No. 2 is given on page 23 of the letter of the Secretary of War referred to before, and the total cost is shown to be $67,555,355.09. The operation cost $3,424,496.85, making a total of $70,979,851.94. In addition, there was the cost of maintenance to July 1, 1921, of $201,674.63.

At the time it was decided to install this plant there was a very great demand for nitrate of soda and also some question as to the sufficiency of this supply during the remainder of the war. The object of the Ordnance Department was to install a nitrate plant which it felt absolutely certain, or as certain as one could be, would operate and produce. The cyanamid process was a very well known process and also was in successful operation in this country.

The CHAIRMAN. In successful operation in this country?

Gen. WILLIAMS. Yes, sir; part of the process was operating in this country.

The CHAIRMAN. Where else was it being produced?

Gen. WILLIAMS. In Canada and in this country together, as well as in several European countries.

The CHAIRMAN. By private concerns?

Gen. WILLIAMS. By a private concern in Canada and in this country, not on such a large scale as the No. 2 nitrate plant, but on a sufficient scale to be sure that they would be able to design a plant of this size and successfully operate it.

The CHAIRMAN. When you say in Canada, do you mean at Niagara Falls?

Gen. WILLIAMS. Making use of the water there, I think, at Niagara Falls, for the purpose of making the calcium carbide and the cyanamid, and then there was another portion of the plant situated within the United States itself which transformed the cyanamid to other nitrogen products.

The No. 2 nitrate plant was designed and built, and, as I said before, had just come into operation and had been nearly finished at the time of the armistice.

The CHAIRMAN. Is that plant completely finished at the present time?

Gen. WILLIAMS. It is practically ready to operate at the present time. The power plant, the quarry, and the plant itself, in fact the whole thing, forms one unit and is ready to operate.

The next one of the properties we have down there included in Mr. Ford's offer is the Warrior power station and the Warrior-Sheffield transmission line.

When it was decided to install in the nitrate plant No. 2 the cyanamid process, it was known, of course, that a very considerable amount of power would be necessary. To have built a power station of the size that was needed would have taken a longer time than to install the other portions of the process, so that the matter was taken up with the Alabama Power Co. I should say that the whole power situation down there was looked into very carefully, and it was found that the quickest results in the way of obtaining power could be had by a contract with the Alabama Power Co. They had in progress of construction or had just completed at that time, I think, a plant at Gorgas, on the Warrior River, some 88 miles from nitrate plant No. 2. The Ordnance Department made arrangements whereby an extension to their plant should be completed for the account of the Ordnance Department and be the property of the Ordnance Department, subject to certain conditions.

A question has arisen concerning an obligation on the part of the United States to sell this plant to the Alabama Power Co. There is no question in my mind but what a moral obligation exists on the part of the Government to deal with the Alabama Power Co., as is stated in the contract. The lawyers say that there is not a legal option there. In our opinion there certainly is a moral one.

The CHAIRMAN. Could you state to the committee why, in your opinion, there is not a legal obligation, but only a moral obligation?

Gen. WILLIAMS. I am not sufficiently familiar with the law, Mr. Chairman, to enter into a legal discussion of it. The Acting Judge Advocate General is here, and he could give you a much better analysis of it than I can.

The CHAIRMAN. We will ask the Judge Advocate General about that when he makes his statement. State why, in your opinion, there is a moral obligation.

Gen. WILLIAMS. The Government found itself very greatly in need of power. The Alabama Power Co. had already projected this extension, and all their plans had been drawn, and they came to the assistance of the Government at a critical time, putting at its disposal their facilities and the plans which they had already made.

The CHAIRMAN. And those facilities and plans were accepted by the Government?

Gen. WILLIAMS. They were accepted by the Government.

The CHAIRMAN. And have been used ever since by the Government, have they?

Gen. WILLIAMS. They were used for a while by the Government in the operation of the plant at Muscle Shoals, and they have since been leased to the Alabama Power Co. We entered into a very definite agreement with the Alabama Power Co., and so far as we are concerned, we believe that that agreement should be carried out.

The CHAIRMAN. What was that agreement?

Gen. WILLIAMS. The agreement is contained in the contract, Mr. Chairman. The agreement is contained in article 22 of contract T-69, which I can give to the committee and enter on the records if you care to have that done.

The CHAIRMAN. I feel confident the committee would like you to put that contract into the official record of the hearings.

Gen. WILLIAMS. I will be glad to do so. [Later put in record by Col. Hull; see p. 150.]

This covers the main properties that the Ordnance Department is interested in at Muscle Shoals.

The CHAIRMAN. Is that contract with the Alabama Power Co. quite long?

Gen. WILLIAMS. Yes, sir; it is a long contract.

The CHAIRMAN. And was signed by the Alabama Power Co., by James Mitchell, its president, for the power company, and for the United States of America by William Williams, lieutenant colonel, Ordnance Department, United States Army, contracting officer, and was witnessed by C. F. Beames and Frank D. Mahoney.

Is that all you have to submit, General?

Gen. WILLIAMS. Yes, sir; that is all I have to say, sir.

The CHAIRMAN. Article 22 of this contract relates to the sale to or purchase by the contractor; are you familiar with article 22 personally?

Gen. WILLIAMS. Yes, sir; I know the general contents of it.

The CHAIRMAN. Would you kindly explain to the committee what you understand by that article?

Gen. WILLIAMS. Mr. Chairman, Col. Burns has been handling this whole question with the Alabama Power Co., and he can explain it to the committee very much better than I can, in that he is very much more familiar with the details, and I should be very glad if you would permit him to do the explaining rather than have me do it.

The CHAIRMAN. We will be very glad to hear from Maj. Burns.

Maj. BURNS. Mr. Chairman, that article is quite complicated. It is so complicated that most of us have really hesitated to summarize it, and if I could escape a summary of it, I should be very glad. However, the gist of it is that at a certain period after the war is terminated, it is agreed that we will sell to the Alabama Power Co. the properties of all kinds that are included in the contract, at a price to be determined by a board of arbitrators, one arbitrator to be selected by the Alabma Power Co., one to be selected by the Government, and the third to be selected by the other two. That is the substance of it. There are many complications as to time and other things that I think would confuse the committee.

The CHAIRMAN. In what way?

Maj. BURNS. If I read it, I believe I could bring out the points.

The CHAIRMAN. I think it is sufficiently important to have it read at this time.

Maj. BURNS (reading):

"ARTICLE XXII.

"*Sale to or purchase by contractor.*—(1) At any time subsequent to three years after the termination of the war, the United States shall have the option to sell to the contractor and the contractor shall upon written demand of the United States buy all its rights, title, and interest in and to the Warrior extension and Warrior substation with all rights appurtenant thereto at the value fixed by arbitration as hereinafter provided. The accumulated fund referred to in Article XIX shall be applied in payment of said value, and any excess of said fund over said value shall be paid over to the contractor: *Provided*, That if the actual cost of Warrior extension and Warrior substation to the United States shall exceed said value, then only the excess of said fund over said cost shall be paid over to the contractor. If said value shall exceed said fund, then the contractor shall pay to the United States the excess in the manner hereinafter provided. As soon as the amount of said value shall be paid or secured as in this article provided, the United States shall convey all of its right, title, and interest in and to said properties to the contractor.

"(2) If and when said accumulated fund shall be equal to or greater than the actual cost to the United States of the Warrior extension and the Warrior substation, the contractor may demand that the United States convey all of its right, title, and interest in and to said properties to the contractor and that it pay over to the contractor the excess, if any, of said fund over said cost, retaining the balance. The United States shall comply promptly with such demand.

"(3) The contractor may also at any time demand that the United States convey to it all of the right, title, and interest of the United States in and to the Warrior extension and Warrior substation upon payment to the United States of any excess of the actual cost of said properties over the amount of said accumulated fund then in the possession of the United States. And upon payment to the United States of such excess the United States shall comply with said demand, retaining the whole of said accumulated fund.

"(4) At any time after December 1, 1926, or such earlier period as the United States shall finally cease to take energy under this contract, said accumulated fund being less than the actual cost to the United States of the Warrior extension and Warrior substation, the contractor may demand that the value of said properties be fixed by arbitration; and

"(a) If the value so fixed is equal to or less than the amount of such accumulated fund, then the United States shall convey to the contractor all of its right, title, and interest in and to said properties by proper instruments in writing within 60 days after notice of the award, retaining in payment the whole of said fund.

"(b) If the value so fixed be greater than said fund then the United States shall upon payment by the contractor of the amount by which such value is greater than said fund, or payment thereof being secured as hereinafter provided, convey all of its right, title, and interest in and to said properties to the contractor by proper instruments, in writing, within 60 days after notice of the award, retaining in payment the whole of said fund.

"(5) In the event that the contractor shall on demand of the United States fail or refuse to purchase the Warrior extension and Warrior substation under any of the foregoing subdivisions of this article, the United States may sell the same to another subject to the conditions that said properties shall not be operated and that they shall not be removed within six months after the sale has been consummated. Upon the consummation of such a sale with another purchaser the United States shall pay over to the contractor the whole of said accumulated fund, less the amount, if any, by which the actual cost of the said properties shall exceed the price realized from such sale.

"(6) In the event that (a) the Warrior extension and Warrior substation are not sold in the manner herein provided to the contractor or to another within the period of 10 years referred to in Article XV or (b), said properties not having been so sold, the United States or its said successor shall cease for 365 consecutive days to take any energy from the Warrior extension, the United States shall, upon six months' notice in writing from the contractor, remove the Warrior extension and Warrior substation from the lands of the contractor unless it shall within 90 days after receipt of such notice proceed to exercise its option under subdivision (1) of this article. In the event of removal pursuant to such notice, the United States shall leave the premises in a neat and workmanlike condition and shall pay over to the contractor the entire amount of the said accumulated fund then in its possession.

"(7) If the United States or its said successor shall for a period of two consecutive years fail to take energy from the Warrior extension, and in any event at the expiration of said period of 10 years, the United States shall, upon 6 months' written notice from the contractor, remove such of said transmission lines and appurtenances owned by it as are located on land or rights of way owned by the contractor: *Provided*, That upon receipt of any such notice the United States may require the contractor to purchase all of its right, title, and interest in and to said transmission lines and their appurtenances at their fair value as fixed by arbitration.

"(8) The contractor shall have a period of 5 years in which to make payment of any amounts due the United States under subdivisions (1) and (4) of this article over and above said accumulated fund: *Provided*, That all deferred payments shall be secured in a manner satisfactory to the Chief of Ordnance. During such period the contractor shall pay to the United States interest on deferred payments at the rate of 5 per cent per annum. At the request of the contractor said period shall be extended two and one-half years, interest during such extended period to be at the rate of 6 per cent per annum. The contractor may anticipate any deferred payment in whole or in part.

"(9) The value of said properties to be determined under this article shall be their fair value and it shall be fixed by arbitration under Article XXIV.

"(10) Actual cost under this article shall be computed as provided in Article XI."

The CHAIRMAN. After having read the article, would you desire to pass upon the various features of it for the benefit of the committee?

Maj. BURNS. I would like to say that the accumulated fund which is referred to constantly in that article never started because of the fact that we purchased very little power under the contract; in fact, I do not think we purchased any under the contract because of the stoppage of the war at about the time we were ready to operate, so that is a dead letter, in a way; but I really prefer not to try to interpret the whole article.

The CHAIRMAN. The Acting Judge Advocate General being the law officer of the War Department can probably pass upon that when we reach him.

Gen. Williams, what do you think about the offer of Mr. Ford of $5,000,000 for these properties which you have shown cost the Government approximately $85,000,000?

Gen. WILLIAMS. Taking the money alone and leaving out of consideration any advantages that come to the Government because of the operation of the plant by Mr. Ford, I should say that $5,000,000 for these properties is a very inadequate sum.

The CHAIRMAN. Will you explain why you think so?

Gen. WILLIAMS. Because the estimated scrap value of these properties is $8,812,000, and if arrangements be made to operate certain portions of them and scrap the remainder, the estimated value is $16,272,000. Mr. Ford is getting these properties, a clear title to them, in accordance with his offer, for $5,000,000, and that to my mind is an inadequate sum, leaving out of consideration, as I say, any benefits that would accrue to the United States from Mr. Ford operating this plant continuously under his contract for the period of the lease.

The CHAIRMAN. In scrapping the property of the Government that we accumulated during the war, have you found that your estimates were not reached in the realization of the amount that you had estimated on the property. For instance, you say you have figured out that these plants could be scrapped with a value of $8,000,000; that is only an estimate on your part?

Gen. WILLIAMS. It is only an estimate, that is very true; but it is based, however, on our experience with other large properties that we have salvaged, and it is our best judgment as to what may be obtained. Now, it may or may not be realized.

The CHAIRMAN. In effect, then, your estimate is only a matter of your judgment.

Gen. WILLIAMS. That is all.

The CHAIRMAN. You might not receive even $5,000,000.

Gen. WILLIAMS. That is entirely possible.

The CHAIRMAN. The committee will probably want to ask you some questions now.

Gen. WILLIAMS. Did you ask me if we think we may not receive $5,000,000?

The CHAIRMAN. Yes.

Gen. WILLIAMS. I should say almost positively we will receive more than $5,000,000. We may not realize the $8,000,000 or almost $9,000,000 that we have estimated, but we believe without any question we would realize more than $5,000,000.

The CHAIRMAN. I also asked whether you knew you would receive the $8,000,000.

Gen. WILLIAMS. That we do not know.

Mr. MCKENZIE. General, the estimate made by the Ordnance Department of the salvage value of these plants, of course, brings in speculative or problematical questions, does it not?

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. In other words, you are not sure whether you can get $8,000,000 or $4,000,000 if these plants are sold for scrap?

Gen. WILLIAMS. We are not sure we could get $8,000,000, of course, and that is based upon our judgment as to the present market we would have to sell it in.

Mr. MCKENZIE. It is a problematical proposition?

Gen. WILLIAMS. It is.

Mr. MCKENZIE. And this much can be said of Mr. Ford's offer, it is a definite, fixed offer of $5,000,000.

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. So we know what he is willing to pay for these various plants.

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. Now, General, I want to ask you just one or two questions in connection with the purpose of this whole proposal. When the law was enacted in 1916 there were several things taken into consideration in writing the legislation, but as I remember—and I was a member of the committee at that time, and helped to write the legislation—the main contention at that time was to enact legislation that would enable the Government to establish, not at Muscle Shoals particularly, but at some point or points within the United States, certain plants for the manufacture of nitrate to be used in preparation for war in the manufacture of munitions and, as I understood it, that was the primary purpose of the legislation; am I right about that?

Gen. WILLIAMS. That is the way I understand it, sir.

Mr. MCKENZIE. It was also understood in connection with that proposition that the War Department would have unquestioned jurisdiction?

Gen. WILLIAMS. Yes, sir.

Mr. MCKENZIE. And you have handled it as the representative of the Ordnance Department?

Gen. WILLIAMS. Yes, sir.

Mr. MCKENZIE. Another proposition involved was the development of the river for navigation purposes; that is, in developing the water power which could be utilized in the manufacture of nitrate navigation was taken into consideration as a secondary proposition, over which the War Department also has jurisdiction.

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. And the third proposition involved, which at that time was understood to be incidental, was that these plants when established and not being used for the manufacture of nitrates to be used in the munitions of war the Government could utilize the plant in the production of nitrates to be used as one of the elements in the production of fertilizer to be used on the farm; am I right about that?

Gen. WILLIAMS. I understand so, sir.

Mr. MCKENZIE. Of course, at that time, the manufacture of nitrates to be used for munitions was the primary and basic proposition.

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. Of course, the Great War having been fought and with the prospect of a number of years of peace ahead of us—we all hope so at least—and with no real necessity for the operation of these plants for the production of nitrates for munitions, they could be advantageously used for the manufacture of this element of fertilizer which could be sold to the farmers of the country, and while, as a matter of fact, in the inception of this proposition the manufacture of fertilizer was incidental, yet at the present time when we are at peace, the manufacture of fertilizer becomes, perhaps, the most important proposition, and to that is attached the condition, even under Mr. Ford's proposition, that the plant shall be maintained continuously in such a condition so that in case of war or in case the Government needs it in any way for the manufacture of munitions it can be immediately turned over to the Government as a matter of national defense and preparedness.

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. And to that extent it would be under the supervision and jurisdiction of the War Department; am I right about that?

Gen. WILLIAMS. Yes, sir.

Mr. MCKENZIE. Now, I just want to ask one or two questions about this contract. The contract with the Alabama Power Co., as I understand it, was entered into between that company and representatives of the Ordnance Department?

Gen. WILLIAMS. Yes, sir.

Mr. MCKENZIE. And as I understand it, the Alabama Power Co. owns all of the land over which this transmission line extends, owns the land where the plant is constructed, and is referred to in the contract as the contractor. Am I right about that?

Gen. WILLIAMS. Yes, sir.

Mr. MCKENZIE. The Government put up that money to build that plant and to build the transmission line, as I understand it?

Gen. WILLIAMS. Yes, sir.

Mr. MCKENZIE. Was that plant built on what is now, perhaps, not the famous but the infamous cost-plus contract system?

Gen. WILLIAMS. I think it was, Mr. McKenzie; with a limit as to total fee to be paid to the contractor.

Mr. MCKENZIE. At any rate, the Alabama Power Co. simply got the money from the Government, constructed the plant, built the transmission line, entered into a contract to sell back to the Government electric current for its use at this plant for the manufacture of nitrates.

Gen. WILLIAMS. Yes.

Mr. MCKENZIE. As I understand it, notwithstanding the law of 1892, the Ordnance Department entered into a contract giving these people an option to purchase this property that the Government has built at its own expense Am I right about that?

Gen. WILLIAMS. Yes, sir; I think so.

Mr. MCKENZIE. It was built at the exclusive expense of the Government, and that is one of the propositions with which we are confronted at this time, the Alabama Power Co. claiming to have certain equities and that we can not enter into a legal contract with Mr. Ford or anyone else until we first settle with them when, if the statute of 1892 is still in force, they have not any standing in court, and it is so stated by the department of the Judge Advocate General: but as I understand you, knowing you to be always fair and charitable to all mankind, notwithstanding you are an officer of the Army and supposed to be somewhat Prussianized, you feel we ought to take the claim of the Alabama Power Co. into consideration and at least treat them equitably and justly in case we go on with this proposition.

Gen. WILLIAMS. I think so.

Mr. MCKENZIE. That is all I want to ask you, General, at this time.

Mr. HULL. In speaking of scrapping or salvaging these plants, I presume that means the Government would lose its capacity to produce nitrates for war purposes, if they did that, would it not?

Gen. WILLIAMS. The $8,812,000 includes the scrapping and consequent destruction of the nitrate plant No. 2 which wipes out the capacity to produce.

Mr. HULL. As a matter of fact, is not that a perfectly unthinkable proposition from the national preparedness standpoint.

Gen. WILLIAMS. Mr. Hull, I do not put that forward as a recommendation. I put that forward simply as a statement of the money that could be obtained from these plants under certain conditions. In so far as the Ordnance Department is concerned, it feels it is vitally interested in the question of the fixation of nitrogen; that it is a measure of preparedness that it must use every endeavor to see brought about, and, in so far as we are concerned, the guaranty of Mr. Ford to keep that plant in operation during the term of his lease is a matter of vital importance to us.

Mr. HULL. And instead of recommending that we scrap them you would positively be opposed to that proposition?

Gen. WILLIAMS. I should be opposed to that proposition, and I have not made any recommendation that they be scrapped. I am simply stating what would happen if they were scrapped.

Mr. HULL. And your opinion of this is all from the national defense standpoint?

Gen. WILLIAMS. Exactly so; and whether or not Mr. Ford's offer is accepted, the Ordnance Department should most earnestly recommend that nitrate plant No. 2 be maintained in a stand-by condition whether operated or not.

Mr. HULL. Mr. Ford's proposition positively agrees to keep these plants in working conditions?

Gen. WILLIAMS. Very true, and from that point of view it is a very great advantage to the Ordnance Department.

Mr. HULL. And about $11,000,000, you estimate, is what the Government would be paying for that measure of preparedness?

Gen. WILLIAMS. That is the statement we make at the end of our report.

Mr. HULL. In your opinion is that too much or too little to pay to be prepared with nitrates?

Gen. WILLIAMS. I think that is a very moderate sum.

Mr. HULL. You are selling some water power at the present time from Dam No. 2, are you not?

Gen. WILLIAMS. No, sir; Dam No. 2 is not completed. There is no water power at Muscle Shoals at the present time.

Mr. HULL. I thought something was said yesterday about some power being sold.

Gen. WILLIAMS. That was steam power. We have leased the steam power plant at the nitrate plant No. 2.

Mr. HULL. That is steam power?

Gen. WILLIAMS. Yes, sir.

Mr. HULL. What are you getting for that?

Gen. WILLIAMS. $120,000 a year, I think, is guaranteed, and then there is a certain other return dependent upon the amount of power that is supplied.

Mr. HULL. You spoke of the cost of the changes in plant No. 1, what would be the estimated cost, approximately, of the changes necessary to make that a working plant?

Gen. WILLIAMS. We estimate that to change this plant over so as to retain its present capacity of 22,000 tons of ammonium nitrate a year would cost about $4,000,000.

Mr. HULL. And there would not be much doubt, if we did that, but what it would be a successful plant, inasmuch as you have seen a plant in this country working that is made on the plan that you would adopt for plant No. 1.

Gen. WILLIAMS. We believe it could be done successfully.

Mr. HULL. Where do we get nitrates at the present time, and as you go along, I wish you would state how much, for instance, we get from Chile, or what is the approximate amount that is imported at the present time.

Gen. WILLIAMS. We have prepared a chart in which is embodied the best statistics we could find concerning the consumption of inorganic nitrogen and the various sources of supply. I can put that chart into the record.

Mr. HULL. That would show, would it not, all the sources for nitrates at the present time with the approximate amount we are getting from those sources?

Gen. WILLIAMS. Yes, sir.

Mr. HULL. That would include the coal-tar process and all the others?

Gen. WILLIAMS. Yes, sir.

Mr. HULL. I wish you would put that chart into the record.

Gen. WILLIAMS. Yes, sir. (See p. 75.)

Mr. HULL. You spoke of a moral obligation to the Alabama Power Co. If we made a contract with the Alabama Power Co. and we asked them to carry out certain provisions of it and they did not carry them out, would there be any moral obligation on our part to carry out the written contract?

Gen. WILLIAMS. I do not think I am entirely competent to explain the legal complications involved in these contractual relations.

Mr. HULL. That is not a legal question; that is a moral question. You took up the question of the moral obligation, and I would like to have your opinion of that as a moral obligation only.

Gen. WILLIAMS. So far as I know, the condition you specify does not exist.

Mr. HULL. If it did exist?

Gen. WILLIAMS. I would rather not answer a question that is purely and simply supposititious.

Mr. JAMES. General, what was the exact date of that contract?

Gen. WILLIAMS. With the Alabama Power Co.?

Mr. JAMES. Yes.

Gen. WILLIAMS. The contract was signed in November, 1918, but it was negotiated in 1917 and 1918.

Mr. JAMES. Was that contract ever submitted to the Judge Advocate General's office for approval?

Gen. WILLIAMS. I do not know, sir, whether it was or not.

Mr. JAMES. Do you not think that all important matters when the Government is practically giving away money should be first submitted to the Judge Advocate General's office before we get into trouble and not afterwards?

Gen. WILLIAMS. No, sir; I do not, because we had during the whole time this contract was negotiated some of the best lawyers in the country who were employed on this kind of work, and I should very much object, in so far as the operations of the Ordnance Department are concerned, to first call upon the Judge Advocate General for approval before we could make a contract. Nothing would slow up business more.

Mr. JAMES. Did some of those lawyers approve of this contract?

Gen. WILLIAMS. They did, and it was negotiated by lawyers.

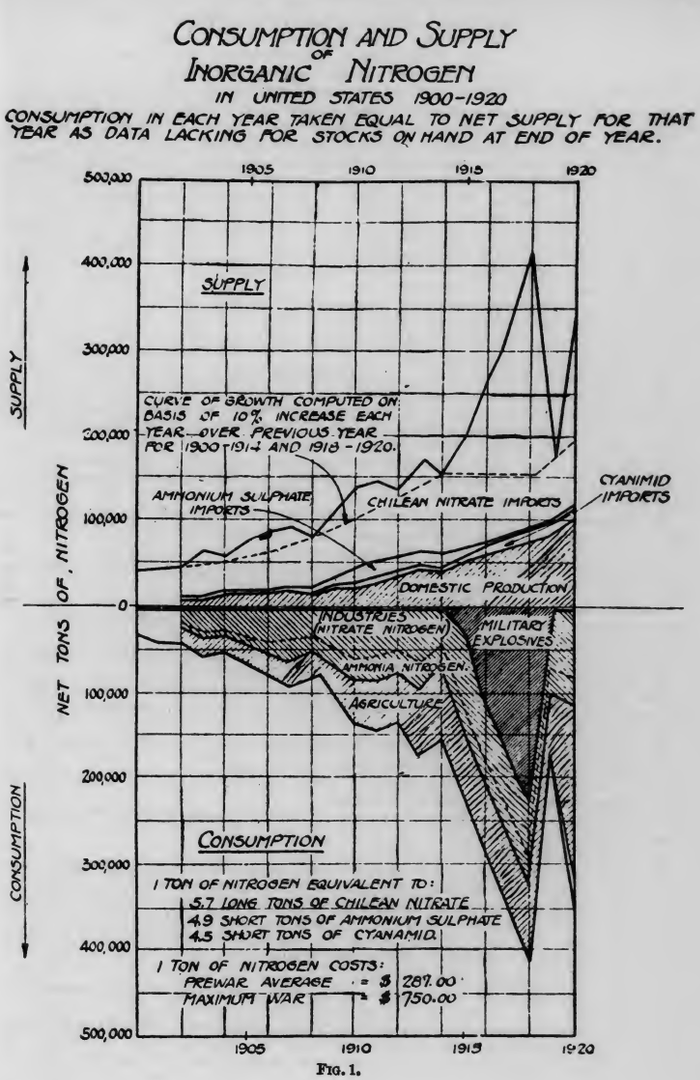

FIG. 1.

Mr. JAMES. When these negotiations were entered into, the war was on?

Gen. WILLIAMS. The war was on; yes, sir; in 1917.

Mr. JAMES. Under the war powers, did we not have the right to take any property or anything else that the Alabama Power Co. had that we wanted?

Gen. WILLIAMS. I think we did have the legal right to do that, but it was a right that was very, very seldom exercised; only in the most exceptional cases.

Mr. JAMES. If we had carried out that legal right which we had at that time we would not be in this controversy with the Alabama Power Co.

Gen. WILLIAMS. But the properly constituted agents of the Government did make this contract with the Alabama Power Co., and that is the fact we are confronted with.

Mr. KEARNS. General, the Air Nitrates Corporation has something to do with Muscle Shoals, has it not?

Gen. WILLIAMS. The Air Nitrates Corporation, I think, was the company we made the contract with to build nitrate plant No. 2.

Mr. KEARNS. How many men compose that corporation?

Gen. WILLIAMS. I do not know, sir.

Mr. KEARNS. Is it not a fact that there are only 10 of them?

Gen. WILLIAMS. I have no idea whatever.

Mr. KEARNS. And they only put in a capital of $100 apiece?

Gen. WILLIAMS. I do not know.

Mr. KEARNS. And that they are capitalized for $1,000?

Gen. WILLIAMS. I do not know.

Mr. KEARNS. And they have already made $2,000,000 out of this proposition, and they still have other claims pending against the Government, have they not?

Gen. WILLIAMS. I know nothing about their profits.

Mr. KEARNS. They still claim some interest in Muscle Shoals, do they not?

Gen. WILLIAMS. They, or rather their parent company, the American Cyanamid Co., have certain royalty rights.

Mr. KEARNS. And it is a corporation composed of 10 men with an investment of $100 each, and they have already made at least $2,000,000 out of it.

Gen. WILLIAMS. I do not know about that.

Mr. KEARNS. Your department has had control of the Muscle Shoals operations, has it not?

Gen. WILLIAMS. I know nothing about their profits.

Mr. KEARNS. Whatever profits they have made have been paid to them by the United States Government?

Gen. WILLIAMS. They have been paid to them by the United States Government?

Mr. KEARNS. Yes.

Gen. WILLIAMS. We had a contract with them; what profit they made out of the contract I do not know, just as I do not know the profits that other people make out of their contracts.

Mr. KEARNS. I believe it is a fact that the Alabama Power Co. was in charge of Muscle Shoals at the time the Government took over the project?

Gen. WILLIAMS. I think they did have some land holdings there at the time the Government became interested in that plant.

Mr. KEARNS. Did they have any activities that they were operating there at the time?

Gen. WILLIAMS. Not so far as I know.

Mr. KEARNS. What was there at Muscle Shoals before the Government took it over?

Gen. WILLIAMS. In so far as the actual use of the waterpower was concerned, nothing was being done as far as I know; there was no activity that corresponded to the United States nitrate plant No. 1 or the United States nitrate plant No. 2.

Mr. KEARNS. Was the Alabama Power Co. carrying on any activity of any kind at Muscle Shoals when the Government took it over?

Gen. WILLIAMS. Not so far as I know.

Mr. KEARNS. What did the Alabama Power Co. have to sell to the Government—just the land?

Gen. WILLIAMS. We may have bought some land from them; I think possibly they did have some holdings there.

Mr. KEARNS. How did the Alabama Power Co. come to have this contract with the Government?

Gen. WILLIAMS. Because they were so situated that they could build a sufficient power plant and deliver power to the Government quicker than anybody else could do it, in so far as we knew.

Mr. KEARNS. They had no activity there of any kind?

Gen. WILLIAMS. No; but the plant they built is 88 miles from plant No. 2, and we had a transmission line to bring the power to nitrate plant No. 2.

Mr. KEARNS. I am trying to find out just what water rights the Alabama Power Co. had there at the time the Government took it over. What was the Alabama Power Co. doing, and what did the Government buy from it?

Gen. WILLIAMS. I do not know what they were doing at Muscle Shoals. So far as I know, they were not doing anything.

Mr. MILLER. General, I want to ask you a few questions in regard to this contract. This contract relating to the erection of the station at the Warrior steam plant, which Maj. Burns read, with the clauses in it giving the Alabama Power Co. a prior right to purchase, was drawn under the law of June 3, 1916, was it not?

Gen. WILLIAMS. Is that the reorganization act of June 3, 1916? Not so far as I know; I should think it had nothing to do with it.

Mr. MILLER. Under what law was the contract drawn?

Gen. WILLIAMS. I do not know under what law it was drawn.

Mr. MILLER. I will read that portion of the act of June 3, 1916, which authorizes the President of the United States to erect nitrate plants. It says:

"The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products by water power or any other power as in his judgment is the best and cheapest to use; and is also hereby authorized and empowered to designate for the exclusive use of the United States, if in his judgment such means is best and cheapest, such site or sites, upon any navigable or nonnavigable river or rivers, or upon the public lands, as in his opinion will be necessary for carrying out the purposes of this act; and is further authorized to construct, maintain, and operate, at or on any site or sites so designated, dams, locks, improvements to navigation, power houses, and other plants and equipment or other means than water power as in his judgment is the best and cheapest, necessary or convenient for the generation of electrical or other power and for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizers and other useful products."

Then further along in the same section it is provided:

"The sum of $20,000,000 is hereby appropriated, out of any moneys in the Treasury not otherwise appropriated, available until expended, to enable the President of the United States to carry out the purposes herein provided for.

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital."

Gen. WILLIAMS. Not a cent of money carried in that act was used in this enterprise. It was paid for out of the appropriation for armament and fortifications.

Mr. MILLER. Then it was not provided for under this act?

Gen. WILLIAMS. No.

Mr. MILLER. United States plants No. 1 and No. 2 were installed by the use of the money provided for in this fund, were they not?

Gen. WILLIAMS. No, sir, they were not.

Mr. MILLER. Out of the fund appropriated for fortifications?

Gen. WILLIAMS. Yes.

Mr. MILLER. Plant No. 2 was completed and ready for operation at the close of the war?

Gen. WILLIAMS. Yes, not long after the close of the war.

Mr. MILLER. When was this rock quarry at Waco purchased?

Gen. WILLIAMS. It was purchased after the war.

Mr. MILLER. How long after the war closed?

Gen. WILLIAMS. I should say about a year.

Mr. MILLER. Out of what fund was that purchased?

Gen. WILLIAMS. It was paid for out of the fortifications appropriation.

Mr. MILLER. The war was over, but still we acquired a rock quarry in connection with a plant for the manufacture of war munitions or nitrates.

Gen. WILLIAMS. We acquired facilities that were necessary to complete the plant.

Mr. MILLER. Did you understand you were authorized to go ahead and install a fertilizer plant there out of funds provided for the fortifications of the United States?

Gen. WILLIAMS. This was not done in connection with that fertilizer plant.

Mr. MILLER. The rock quarry was not purchased for that purpose?

Gen. WILLIAMS. No, it was——

Mr. MILLER (interposing). What was it purchased for?

Gen. WILLIAMS. In connection with the ammonium nitrate plant.

Mr. MILLER. What is used in that production?

Gen. WILLIAMS. The limestone is first converted into lime, and that is one of the raw materials for making the cyanamid.

Mr. MILLER. How much is used?

Gen. WILLIAMS. I think it requires 2,000 tons a day for the full operation of the plant.

Mr. MILLER. Two thousand tons of the stone?

Gen. WILLIAMS. Two thousand tons of the limestone.

Mr. MILLER. To make how many tons of the ammonium nitrates.

Gen. WILLIAMS. That is to make 110,000 tons a year.

Mr. MILLER. It requires 2,000 tons a day?

Gen. WILLIAMS. That is my recollection of the figures.

Mr. MILLER. This rock crushing plant at the quarry was used as a part of the appurtenances of that plant?

Gen. WILLIAMS. It was one of the facilities necessary to supply needed raw material for the cyanamid plant.

Mr. MILLER. Now, the process at plant No. 1, which you speak of, is a different process from that at plant No. 2?

Gen. WILLIAMS. Yes.

Mr. MILLER. That is the Haber process—the German process?

Gen. WILLIAMS. The German process modified by the General Chemical Co.

Mr. MILLER. It differs materially in the process of manufacture from the cyanamid process?

Gen. WILLIAMS. Completely.

Mr. MILLER. That plant was a failure?

Gen. WILLIAMS. It was a failure, that is, that part of it which is known as the Haber process; where the nitrogen was welded to the hydrogen; the other parts were entirely successful.

Mr. MILLER. But so far as the output is concerned——

Gen. WILLIAMS. So far as the output is concerned, it is a failure.

Mr. MILLER. Did it follow the correct Haber formula?

Gen. WILLIAMS. It was a modification of the Haber process.

Mr. MILLER. Who put in that modification?

Gen. WILLIAMS. The General Chemical Co. designed it. They had made certain experiments which had convinced them that they could modify it, as they thought, to produce a successful output.

Mr. MILLER. Was the option given to them to modify this process, with the understanding that the process had been in successful operation?

Gen. WILLIAMS. I do not know whether at that time anybody in this country knew enough about the Haber process to put it in directly, but so far as we could find out, the best informed people concerning this process were the General Chemical Co., and we made a contract with them in the light of the best information we had.

Mr. MILLER. And authorized them to put in the process——

Gen. WILLIAMS (interposing). That proved a failure.

Mr. MILLER. The Haber process is a successful process, is it not?

Gen. WILLIAMS. Quite so. At that time it was being worked in Germany, but there was no information here, so far as I know, in regard to it on which we could go ahead and build a plant.

Mr. MILLER. Who was the authority that designated that this Haber process should be installed at Plant No. 1?

Gen. WILLIAMS. It was done by the Chief of Ordnance, acting, however, under specific instructions from the Secretary of War and the President, who acted on the advice of the nitrate supply committee, a committee composed of leading engineers and scientists, among them Dr. Charles L. Parsons, an enthusiastic advocate of the Haber process and at that time chief chemist of the Bureau of Mines.

Mr. MILLER. Who was the Chief of Ordnance at that time?

Gen. WILLIAMS. Gen. Crozier was the Chief of Ordnance at that time. This process was a pioneer process, and it would have been rather extraordinary if it had come through without any troubles at all.

Mr. MILLER. At any rate the Government went into a $12,000,000 venture which proved a failure?

Gen. WILLIAMS. Yes; but they were entirely justified in doing so, in my opinion.

Mr. MILLER. That is a question, as to whether the Government wants to go into it.

Gen. WILLIAMS. That is simply my personal opinion.

Mr. MILLER. Can that process there now be completed at a reasonable expense?

Gen. WILLIAMS. I think so.

Mr. MILLER. Can it not be turned into the cyanamid process?

Gen. WILLIAMS. Oh, no; it is entirely different.

Mr. MILLER. But it can be turned into a productive concern, in your judgment?

Gen. WILLIAMS. Yes; it could be.

Mr. MILLER. Out of what fund was the $16,000,000 which was put into Dam No. 2 taken?

Gen. WILLIAMS. That was entirely out of the $20,000,000 appropriated in the act you have just referred to.

Mr. MILLER. That came out of this $20,000,000?

Gen. WILLIAMS. Yes, sir.

Mr. MILLER. That is the dam proposition?

Gen. WILLIAMS. Yes.

Mr. MILLER. General, you are acquainted somewhat with the manufacture of fertilizer?

Gen. WILLIAMS. I know nothing about the manufacture of fertilizers. The only thing we have gone into has been the production at Muscle Shoals in nitrate plant No. 2 of one of the essential components of fertilizers.

Mr. MILLER. Was the construction of Dam No. 3 at Muscle Shoals, or the proposed construction of it, for the purpose of furnishing power for either of these nitrate plants, plant No. 1 or plant No. 2?

Gen. WILLIAMS. No, sir; it was not necessary for that purpose.

Mr. MILLER. Any power produced at that time would have been merely for commercial purposes; that is, around the two nitrate plants, to sell or do whatever they wanted to do with it.

Gen. WILLIAMS. The continuous operation of nitrate plant No. 2 would require about 90,000 horsepower, and that would take up nearly all the primary power that would come from Dam No. 2.

Mr. MILLER. Then, so far as the continuation of nitrate plant No. 2 is concerned, that is, it being held in reserve and in readiness as a war preparedness measure, Dam No. 3 has no connection?

Gen. WILLIAMS. No, sir.

Mr. MILLER. The Warrior steam plant is 88 miles distant?

Gen. WILLIAMS. Yes, sir.

Mr. MILLER. And that furnishes the power to each of these nitrate plants, plant No. 1 and plant No. 2?

Gen. WILLIAMS. Yes, sir; but nitrate plant No. 1 has its own power plant; very little power is required in the Haber process, and that is one of its great advantages.

Mr. MILLER. Then, the power from the Warrior steam plant——

Gen. WILLIAMS (interposing). Will be needed principally at plant No. 2.

Mr. MILLER. Has plant No. 2 any local power plant?

Gen. WILLIAMS. It has a power plant which is almost of sufficient capacity to run it by itself. That power plant, however, was not expected to be entirely completed by the time its power would be needed by the remainder of the plant.

Mr. MILLER. That plant is still in existence?

Gen. WILLIAMS. It is there, and is now leased.

Mr. MILLER. And it is sufficient to operate plant No. 2?

Gen. WILLIAMS. Yes; practically so.

Mr. MILLER. Then the presence of the Warrior steam plant would be simply as a reserve power, and is of no practical use in operating plant No. 2?

Gen. WILLIAMS. It is not essential to plant No. 2, assuming that in case of emergency some 20,000 horsepower can be obtained over the transmission line from the Alabama Power Co.'s system.

Mr. MILLER. Then that can be disposed of without in anywise interfering with the output of plant No. 2, so far as fertilizer production is concerned?

Gen. WILLIAMS. Yes; because water power rather than steam power would be necessary to manufacture fertilizer commercially.

Mr. MILLER. That could probably be disposed of to the best advantage of any of these units around Muscle Shoals, could it not?

Gen. WILLIAMS. I should think probably so.

Mr. MILLER. What would be the difficulty, so far as preserving plant No. 2 as an element of national preparedness is concerned, in disposing of the Warrior steam plant?

Gen. WILLIAMS. There would be no difficulty.

Mr. MILLER. You have placed a pretty high value on the salvage of the plant, have you not?

Gen. WILLIAMS. Our figures there are based on information we got from the Federal Power Commission, in which they estimated that a plant of that kind was worth about $100 per kilowatt.

Mr. MILLER. That would make the value how much?

Gen. WILLIAMS. About $3,000,000.

Mr. MILLER. If we should dispose of the Warrior steam plant we would receive salvage to the amount of three-fifths of what Mr. Ford intends to give for the entire property, including the Warrior plant?

Gen. WILLIAMS. Yes, sir.

Mr. MILLER. If that can be done, it seems to me it would be rather imprudent to sell the whole thing for $5,000,000, when you could sell a little angle of it for $3,000,000.

Gen. WILLIAMS. According to our estimates, Mr. Ford could salvage everything except the nitrate plant No. 2, and get a sufficient return to make nitrate plant No. 2 stand him a cost of about $400,000; in other words, almost give it to him.

Mr. MILLER. Do we own all of the right of way on the transmission lines from the Warrior plant to plant No. 2?

Gen. WILLIAMS. We do not own any of it.

Mr. MILLER. What would it probably cost?

Gen. WILLIAMS. We do not know.

Mr. MILLER. Have you estimated the probable cost?

Gen. WILLIAMS. No, sir; we have not.

Mr. MILLER. Who has estimated what that would be?

Gen. WILLIAMS. So far as I know, there has been no estimate made on that.

Mr. MILLER. Mr. Ford's contract presupposes that that would not only be acquired but paid for by the United States?

Gen. WILLIAMS. As I understand it, the United States must give him a clear title to all those properties.

Mr. MILLER. The cost of that would probably be a very substantial sum, would it not?

Gen. WILLIAMS. I should think so.

Mr. MILLER. According to Mr. Ford's contract the United States is also to pay any overflow damages at Dam No. 3, which your department estimated to be $2,000,000, as I understand it?

Gen. WILLIAMS. That is the estimate of the Engineers.

Mr. MILLER. What I was getting at is this: The purchase of the transmission line from the Warrior steam plant to plant No. 2, a distance of 88 miles, adding also to that the expense to which the United States Government would be put for damages for the overflowing at Dam No. 3, would probably absorb the greater portion, if not all, of this $5,000,000 that Mr. Ford is going to pay?

Gen. WILLIAMS. I should think it might.

Mr. MILLER. Then the United States Government would get nothing whatever in the shape of payment?

Gen. WILLIAMS. Practically nothing.

Mr. MILLER. But we can salvage the little unit down there at the Warrior plant for $3,000,000 and get something out of it?

Gen. WILLIAMS. Yes, sir.

Mr. MILLER. And by eliminating Dam No. 3, that would eliminate the $2,000,000 of consequential damages that would arise in the event of damage to that property?

Gen. WILLIAMS. Yes, sir.

Mr. MILLER. It would also eliminate about $20,000,000 for the construction of that dam?

Gen. WILLIAMS. Yes, sir.

Mr. MILLER. And if that amount were put into the construction of the Wilson Dam you would have a completed dam that would generate how many horsepower?

Gen. WILLIAMS. It would generate about 100,000 primary horsepower.

Mr. MILLER. What do you mean by primary horsepower?

Gen. WILLIAMS. That means power available every day for 365 days in the year, 24 hours a day.

Mr. MILLER. At some periods of the year there would be in excess of that?

Gen. WILLIAMS. Yes, sir. The Engineer Department have figures in reference to the probable horsepower that could be developed.

Mr. MILLER. Then by eliminating Dam No. 3, selling this Warrior steam-power plant, and completing the construction of Dam No. 2, the Government would be way ahead in the deal, would it not?

Gen. WILLIAMS. It seems so to me.

Mr. PARKER. Gen Williams, how much property does that option of the Alabama Power Co. cover?

Gen. WILLIAMS. I think there are about 15 acres at the Gorgas plant. You mean the value?

Mr. PARKER. No; I mean what property does it cover. Of course, it covers the Warrior steam plant and the transmission line.

Gen. WILLIAMS. It covers a total of $4,979,382.33.

Mr. PARKER. What other property would be included in the purchase?

Gen. WILLIAMS. That is the portion of the building the United States put up at the Gorgas plant, the machinery put in there, the transmission line and the Warrior substation, and what was called the Drifton railroad.

Mr. PARKER. It does not cover plant No. 2?

Gen. WILLIAMS. It has nothing to do with plant No. 2 at all.

Mr. PARKER. It is only this extra power?

Gen. WILLIAMS. Yes, sir.

Mr. PARKER. And they have no option on plant No. 2?

Gen. WILLIAMS. Not a bit.

Mr. PARKER. If they take it, they would have to pay the cost of construction, under their contract?

Gen. WILLIAMS. The price at which they take it would be determined by a board of arbitrators, which would be formed as specified in the contract.

Mr. PARKER. That contract speaks about a fund; is there any such fund?

Gen. WILLIAMS. That fund was never started because we got practically no power from there.

Mr. PARKER. So that they would take it at a price based to some extent upon the cost of construction?

Gen. WILLIAMS. The price would be determined by the board of arbitrators.

Mr. PARKER. It would be practically a sale to them of this auxiliary plant and nothing else, not a sale of plant No. 2?

Gen. WILLIAMS. No, sir; not at all.

Mr. PARKER. And there is no fund to embarrass that at all?

Gen. WILLIAMS. I think not.

Mr. PARKER. At plant No. 2 you make nitrates. Did I understand you to say that nitrates went into the fertilizers, or do they have to be changed into sulphate of ammonia before they go into the fertilizer?

Gen. WILLIAMS. The ammonium nitrate which we make at the plant has a fertilizing value, and a very good one, but its physical characteristics are such that it is difficult to handle.

Mr. PARKER. It is dangerous to carry; it might explode?

Gen. WILLIAMS. It is rather difficult to explode, but it can be done. It was an explosion of that kind which occurred at the Morgan depot. But it is safe explosive to handle.

Mr. PARKER. Is it used in fertilizer, or is the sulphate used?

Gen. WILLIAMS. The sulphate is a staple ingredient of the fertilizer. The ammonium nitrate is used a good deal in blasting powders, and there is a considerable market for it there.

Mr. PARKER. That is a different thing. The ammonium nitrate is not used in fertilizer.

Gen. WILLIAMS. Only to a very limited extent, if at all.

Mr. PARKER. Have we any facilities for making ammonium sulphate?

Gen. WILLIAMS. No, sir; additional appliances would have to be installed to produce ammonium sulphate.

Mr. PARKER. How much money would that cost, for a capacity of 110,000 tons a year?

Gen. WILLIAMS. We estimate that the additional machinery required to produce ammonium sulphate to the capacity of the plant, 215,000 tons a year, would be about $3,000,000.

Mr. PARKER. Ammonium sulphate is a very well-known article of commerce?

Gen. WILLIAMS. I understand so; yes, sir.

Mr. PARKER. What does it sell for at the present time?

Gen. WILLIAMS. It is now selling for $50 a ton.

Mr. PARKER. That is the sulphate?

Gen. WILLIAMS. Yes, sir.

Mr. PARKER. If it was made there it would have to be sold to the fertilizer people because it is not used by itself?

Gen. WILLIAMS. That would be the market for it.

Mr. PARKER. You would have to rely upon such a market at $50 a ton?

Gen. WILLIAMS. The present market price is perhaps subnormal.

Mr. PARKER. How much can you make nitrate for per ton?

Gen. WILLIAMS. You mean ammonium nitrate?

Mr. PARKER. Yes.

Gen. WILLIAMS. We estimate that by using steam power it will cost us $96.92 per ton to make nitrate of ammonia; using the cheap waterpower we estimate it will cost us $75.25 per ton.

Mr. PARKER. Does that include any overhead charges, or only the actual cost of manufacture?

Gen. WILLIAMS. It does not include any allowance for interest on the capital cost, for depreciation, obsolescence, taxes, or insurance.

Mr. PARKER. Or profit of any kind?

Gen. WILLIAMS. No profit, no.

Mr. PARKER. Nothing for interest, profit, taxes, insurance, depreciation, or re-repairs?

Gen. WILLIAMS. It includes repairs.

Mr. PARKER. But not depreciation?

Gen. WILLIAMS. No sir.

Mr. PARKER. Commercially then, you can not make it for much less than $100 a ton?

Gen. WILLIAMS. I should think that would be about right.

Mr. PARKER. That is the nitrate. How much would be added to that cost in converting it into sulphate for getting sulphuric acid, and things of that kind?

Gen. WILLIAMS. We would not convert nitrate into sulphate of ammonia. The corresponding sulphate prices would be, using the steam power, $58.70 per ton; and using water power. $48.07 per ton.

Mr. PARKER. For the sulphate?

Gen. WILLIAMS. For the sulphate; yes, sir.

Mr. PARKER. So that that can be made cheaper than the nitrate?

Gen. WILLIAMS. Cheaper than the ammonium nitrate; yes, sir.

Mr. PARKER. Of course something ought to be added for depreciation.

Gen. WILLIAMS. That price was figured on the same basis as the other.

Mr. PARKER. Commercially, you would add at least 25 per cent for that?

Gen. WILLIAMS. I should say that was not unreasonable.

Mr. PARKER. So that would make it $75 a ton, approximately, if made by steam power, and approximately $62.50 per ton if made by water power?

Gen. WILLIAMS. Yes.

Mr. PARKER. It is now selling in the market for $50 a ton?

Gen. WILLIAMS. Yes; but that is a very low price for it.

Mr. PARKER. It is low compared to what it was during the war.

Gen. WILLIAMS. And right after the war.

Mr. PARKER. What was the price before the war?

Gen. WILLIAMS. It averaged about $60 a ton, I think.

Mr. PARKER. Your figures in both instances are rather higher than the figures showing the average price paid for it before the war.

Gen. WILLIAMS. Yes; if you add 25 per cent to your cost to manufacture.

Mr. PARKER. I added 25 per cent for contingencies. Any manufacturer would have to add something for that, and Mr. Ford proposes to add 8 per cent, by way of his profits?

Gen. WILLIAMS. Yes.

Mr. PARKER. How is this ammonium sulphate usually made—by this process or in some other way?

Gen. WILLIAMS. I think the largest sources of supply are the by-product coke ovens and the gas works. Those two constitute the principal sources of supply.

Mr. PARKER. They are by-products in the coke ovens and gas factories, so that anything they get out of it is to their advantage, and they can lower their prices if they have to, in order to meet the market.

Gen. WILLIAMS. I suppose so.

Mr. PARKER. Under those circumstances it does not seem to me that a very strong case is made out to the effect that fertilizer can be made much cheaper here than elsewhere.

Gen. WILLIAMS. We have never been able to make out such a case.

Mr. PARKER. You can not make out a case if fertilizer can not be made cheaper, or its ingredients can not be made cheaper at Muscle Shoals than at the coke ovens and the gas works.

Gen. WILLIAMS. Our estimates on the cost of ammonium sulphate produced at these plants does not lead us to believe that the cost of fertilizer can be materially cheapened.

Mr. PARKER. As I understand it, fertilizer contains only about 3 per cent of this material.

Gen. WILLIAMS. I do not know much about fertilizer, but I understand that there are three essential elements in it—phosphorous, potassium, and nitrogen. Now, the formula specifies a certain percentage of each of these elements contained in the fertilizer.

Mr. PARKER. What did fertilizer sell for before the war?

Gen. WILLIAMS. I suppose that would be a question of the formula on which it was made.

Mr. PARKER. I am getting at the practical end of it. You do not think the operation of this plant would materailly reduce the cost of fertilizer, under these circumstances?

Gen. WILLIAMS. This plant would produce only one of the components of fertilizer.

Mr. PARKER. And not at a cheaper price than it can be produced elsewhere?

Gen. WILLIAMS. I do not think that we would find the cost of that component would be materially reduced.

Mr. HILL. General, Mr. Ford's offer includes nitrate plant No. 1, nitrate plant No. 2, the Waco quarry, and the Gorgas-Warrior steam plant?

Gen. WILLIAMS. Yes.

Mr. HILL. As I understand it, the question as to the possible rights of the Alabama Power Co. only apply to the Gorgas-Warrior steam plant?

Gen. WILLIAMS. And the transmission line.

Mr. HILL. The transmission line is included in the properties which Mr. Ford wishes to buy, and that would come under the head of the Gorgas-Warrior steam plant?

Gen. WILLIAMS. Yes.

Mr. HILL. Nitrate plant No. 1 is not in operation?

Gen. WILLIAMS. Neither one is in operation.

Mr. HILL. As a matter of national defense, nitrate plant No. 1 is not essential?

Gen. WILLIAMS. Nitrate plant No. 1 to-day, as a producing plant, has no value.

Mr. HILL. Mr. Ford does not propose to keep that up?

Gen. WILLIAMS. No; he does not.

Mr. HILL. Nitrate plant No. 2 is the one that it is proposed to keep up?

Gen. WILLIAMS. Yes; that is the only one.

Mr. HILL. The only inducement to the Government, from a national-defense point of view, so far as this office is concerned, is the upkeep of nitrate plant No. 2?

Gen. WILLIAMS. That is the one that is of material benefit to the Government.

Mr. HILL. Nitrate plant No. 2, as listed by Mr. Ford, is entirely self-sustaining; it has all its elements of power?

Gen. WILLIAMS. Yes.

Mr. HILL. Does it depend on Dam No. 2?

Gen. WILLIAMS. Of course, the cost of the product of nitrate plant No. 2 would be materially reduced by using the cheap water power that would come from Dam No. 2.

Mr. HILL. He could use this power so obtainable?

Gen. WILLIAMS. Yes; he would have the steam plant, and my guess would be that he would use the steam plant so that in time of low water he would materially increase the primary power and at the season of high water he would cut off the steam plant and let it lie inactive.

Mr. HILL. Is the Waco quarry essential to nitrate plant No. 2?

Gen. WILLIAMS. It is essential in that one of the raw materials used in the manufacture of the cyanamid comes from the quarry. That is, we take the limestone and make from it the lime which is used in the manufacture of carbide.

Mr. HILL. In answering a question asked you by Mr. Miller you estimated that that would take 2,000 tons a day?

Gen. WILLIAMS. That is for the whole operation of the plant.

Mr. HILL. I suppose that would be on a basis of 300 days a year?

Gen. WILLIAMS. Yes, sir.

Mr. HILL. To make 110,000 tons?

Gen. WILLIAMS. Yes.

Mr. HILL. That is, 600,000 tons altogether?

Gen. WILLIAMS. Yes.

Mr. HILL. Has it been estimated how long the quarry would be able to furnish that?

Gen. WILLIAMS. No definite estimate has been made, but there is a large amount of stone there.

Mr. HILL. The reason I asked that question is that it has a bearing on the matter of the term of the lease, whether it is 50 years or 100 years. It is not an outright purchase, but looking at it from a national-defense point of view, I wanted to find out whether the products of that quarry were available elsewhere in the vicinity. Is that material met with frequently in the neighborhood?

Gen. WILLIAMS. I think so. I am told by one of our officers that the exploration of Waco quarry so far made has disclosed a supply for 20 years, and the estimate is that there will be enough for 80 or 100 years.

Mr. HILL. But the products of the quarry are obtainable in the neighborhood for use?

Gen. WILLIAMS. I think so; yes.

Mr. WURZBACH. Are there any plants in Germany in successful operation which are using the Haber process at this time?

Gen. WILLIAMS. I think the plant at Oppau was using the Haber process.

Mr. WURZBACH. That was the plant that blew up some time ago?

Gen. WILLIAMS. Yes.

Mr. WURZBACH. You do not know of any other?

Gen. WILLIAMS. There is one at Merseburg.

Mr. WURZBACH. That is the only one which has used that process since the destruction of the plant at Oppau?

Gen. WILLIAMS. So far as we know.

Mr. FIELDS. General, referring to the discussion of the price of fertilizer, it is highly probable, is it not, that new developments and new compounds may materially reduce the cost of the production of fertilizer at this or any other point in the near future, with our present progress?

Gen. WILLIAMS. We do not produce fertilizer; we produce just one component. Now, it seems to me that the fixation of nitrogen from the atmosphere, in so far as I know it, is just really beginning.

The CHAIRMAN. You do not produce fertilizer?

Gen. WILLIAMS. No, sir; we produce only one ingredient of fertilizer. The question of the fixation of nitrogen is one that is being constantly studied in all of the scientific countries, and it is something that all recognize as essential. The supplies in Chile are being exhausted, and it probably will not be a great many years before they will no longer be able to supply the needs of the world. Therefore it is essential to develop this process. Just what is going to be the successful method, I do not believe anybody can say. The people who have studied the question all differ among themselves as to just what is the best process. They all agree that it is of great benefit; they all agree, I think, that some time or other in the not far distant future the fixation of nitrogen will be on a commercial basis, just as the production of pig iron, but nobody will dare to say what process is going to bring that out.

Mr. FIELDS. They all agree it is a proposition in which there are great possibilities?

Gen. WILLIAMS. Yes.

Mr. FIELDS. Taking the proposition at Muscle Shoals, the whole outfit down there, we have got to do one of five things: First, scrap it; second, operate it by the Government; third, maintain it in an idle, stand-by condition for the use of the Government in time of energency; fourth, lease it to private individuals or a corporation; or fifth, let it rust down and become a wreck.

Let us take the propositions in their order. The War Department, as I understand, from the standpoint of national preparedness, is opposed to the scrapping of this plant?

Gen. WILLIAMS. Yes.

Mr. FIELDS. Under any circumstances?

Gen. WILLIAMS. Yes, sir.

Mr. FIELDS. Then the next proposition would be its operation by the Government. Probably the Secretary of War has made some suggestion along that line. I will ask you to prepare, if you have not already done so, an analysis covering the operation of plant No. 2 for a period of six years, we will say, by the Government, showing the cost of operation and the proceeds therefrom, including depreciation, etc., everything that a business concern would put into its operating computation.

Gen. WILLIAMS. I will have that prepared.

Estimate of results of operation by Government of United States nitrate plant No. 2, Muscle Shoals, Ala., for period of 6 years.

[Including fixed charges, etc., figured in accordance with commercial but not with Government accounting procedure.]

ESTIMATED RECEIPTS.

Sale of 6×215,000 tons of ammonium sulphate, at $65 per ton	$83,850,000

ESTIMATED EXPENSES.

Cost, f. o. b. cars, of 6×215,000 tons of ammonium sulphate, assuming steam power used for 3 years and water power used for 3 years, at $58.70 and $48.07 per ton	$68,766,650
Extra expense in building up business	1,500,000
Cost of maintaining portion of plant not used for sulphate manufacture	180,000
Depreciation on $20,000,000 [1] for 6 years, at 5 per cent	6,000,000
Interest on $24,140,000 [2] for 6 years, at 5 per cent	7,242,000
Taxes [3] on $24,140,000 for 6 years, at 1½ per cent	2,172,600
Insurance on $15,140,000 [4] for 6 years, at 1 per cent	908,400
Total	86,769,650
Excess estimated expenses over estimated receipts	2,919,650

NOTE.

Estimated present value of plant	11,640,000
Estimated cost of sulphate of ammonia department, including storage buildings, etc	3,500,000
Estimated working capital needed	9,000,000

Mr. FIELDS. The third proposition is that of maintenance in an idle standby condition. What would be the annual cost of maintaining this plant in an idle condition? You are not prepared, I take it, to furnish an analysis of that kind at the present time?

Gen. WILLIAMS. We can give you the actual expenditures for its maintenance, because the plant had not been operated since it was closed down shortly after the armistice. For the fiscal year 1921 the cost of maintenance of that plant was $201,674.33. For the fiscal year 1922 the cost of maintenance will be about $125,000.

Mr. FIELDS. Does that include the receipts from the power company?

Gen. WILLIAMS. No, sir; that is the expenditure.

Mr. FIELDS. Then I would like to have you prepare an analysis showing the cost of the maintenance of this proposition for a period of 20 years in an idle stand-by condition. I believe it is stated in your report and also in the exhibit included in the Secretary's report to Congress, that depreciation and obsolescence would result in the whole thing becoming valueless in 20 years, if it were maintained in an idle, stand-by condition. I am asking for this in order to try to arrive at a correct estimate of what the cost to the Government would be for the period of the proposed lease to Mr. Ford, should the Government attempt to maintain this plant in an idle stand-by condition for preparedness.

Then, General, how long would it take, if the plant were maintained in this way, to secure an organization for the operation of the plant in time of emergency?

For the sake of comparison which we may want in the future in the consideration of this matter, I would like to have you put in the record the cost of the nitro plant in West Virginia, its estimated salvage value, and the price that the Government got for it. Also I would like to have you put in the same information in regard to the Old Hickory plant and the nitrate plant on the Ohio River, so we may understand or know whether these plants have brought the Government the estimated salvage value.

Gen. WILLIAMS. Yes, sir; I will put those statements in the record.

(The following statement was later furnished for the record:)

"(1) It is estimated that the cost of maintaining United States Nitrate Plant No. 2 in idle stand-by for a period of 20 years would average $100,000 per year or $2,000,000 for the 20-year period, plus $2,000,000 for replacements, or a total of $4,000,000 for the 20-year period.

"The estimate of $100,000 per year for maintenance is based on maintenance cost for the present fiscal year taking into account savings made and to be made. The $2,000,000 replacement estimate is made on the cost of those replacements which it appears now would have to be made, viz, the various vent stacks, practically all of

[1] Estimated cost to replace plant at end of 20 years by plant of equivalent capacity, using same or different process.

[2] Present value of plant plus cost of additional construction necessary to manufacture sulphate of ammonia, plus necessary working capital.

[3] It has been stated that cyanamid plants are exempt from taxation in Alabama. The Ordnance Department does not know whether this is a fact, and taxes have been included in this statement.

[4] Present value of plant plus cost of additional construction necessary to manufacture sulphate of ammonia.

which are too small to permit of painting inside; flashing where these stacks and others project through the roof; all rubber and the greater part of the leather conveyor and drive belting; helicoid conveyor casings; boiler tubes of the power houses and steam plant; a large amount of the piping; and much of the equipment of the acid area. Replacement expense will not start for possibly from 5 to 10 years and then in rather small amount, but will increase in such proportion that by probably the end of 20 years this expense per year will be prohibitive. While it is reasonably certain that these replacements will have to be made, it is also likely that there will be others which may amount to as much as $7,000,000.

"(2) With the plant maintained in idle stand-by it is estimated that sufficient organization for emergency operation could be secured to start operation in one and one-half months, to start production in three months, and to reach capacity production in five months.

"(3) The smokeless power plant at Nitro, W. Va., cost $60,631,400, but materials aggregating $2,798,329 were sold or transferred from the plant prior to its sale. The estimated salvage value was placed at $8,736,026. The sale price of the plant was $8,551,000 plus a storage space of 67,500 square feet for two years valued at 25 cents per square foot per year or $33,750.

"The Old Hickory plant cost $84,912,000, but materials aggregating $5,708,000 were sold or transferred from the plant prior to its sale. The estimated salvage value was placed at $7,600,000. The sale price of the plant was $3,505,000 plus a storage space of 866,000 square feet for five years valued at 25 cents per square foot per year, or $1,082,500 for the five-year period.

"The nitrate plant near Cincinnati, Ohio, was never completed, but cost $7,321,400 as far as completed. This plant has been retained by the War Department and is being used as a storage depot."

Mr. QUIN. General, you are the Chief of Ordnance of the United States Army?

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. Let us see what difference there is between us. I am a Congressman of the United States, and we both represent the people. I believe we ought to accept this proposition of Mr. Ford. I do not think you believe we ought to accept it, do you?

As I understand it, this Congress ought to do the best thing for the American people. You start out with an investment of $85,000,000 or a little more, which Mr. Ford proposes to take over. As I understand it, the estimate submitted by the Secretary of War, as well as your estimate shows that the scrap value which the Government could get out of these plants is something over $8,000,000?

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. That includes the nitrate power plant No. 2?

Gen. WILLIAMS. It includes everything.

Mr. QUIN. What did the Government, through you, pay the Alabama Power Co. for erecting nitrate plant No. 2, power plant No. 2?

Gen. WILLIAMS. The Alabama Power Co. had nothing to do with nitrate plant No. 2.

Mr. QUIN. They had nothing to do with it?

Gen. WILLIAMS. No, sir.

Mr. QUIN. What did you pay them for? What did they construct?

Gen. WILLIAMS. We made a payment to them amounting to $4,789,938.34.

Mr. QUIN. That was with a profit to them of 10 per cent upon the cost, was it not? That was one of the 10 per cent cost-plus contracts?

Gen. WILLIAMS. Six per cent, with a limit as to total fee.

Mr. QUIN. Did they have a contract different from the contracts of these other fellows, General?

Gen. WILLIAMS. The percentage on the cost-plus contracts varied.

Mr. QUIN. I would like you to get the exact information on that to show us exactly what those gentlemen got, because 4 per cent on $4,000,000 makes quite a difference.

This nitrate plant No. 2 and the power plant at No. 2 is proposed by Mr. Ford to be left intact, ready for operation, is it not?

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. In your estimate of what Mr. Ford is getting, aside from that, he is paying $2,000,000 more than you estimate in your figures of $8,000,000 as the scrap value.

Gen. WILLIAMS. I do not understand you.

Mr. QUIN. Mr. Ford is offering to give the Government $3,000,000 more, is he not?

Gen. WILLIAMS. I do not understand that at all.

Mr. QUIN. You have estimated the total scrap value at $8,000,000 and a little over, have you not?

Gen. WILLIAMS. The total for everything as scrap is estimated as $8,812,000.

Mr. QUIN. Close to $9,000,000.

Gen. WILLIAMS. Mr. Ford gets a clear title to all the property represented by that amount.

Mr. QUIN. Except this nitrate plant No. 2 and power plant No. 2, which he leaves to the Government?

Gen. WILLIAMS. He gets a clear title to that.

Mr. QUIN. But he is to hold it in readiness for the use of the Government at any time?

Gen. WILLIAMS. He obligates himself under the contract to operate plant No. 2 for the purpose of fixing nitrogen, eventually for the purpose of producing fertilizer, but in such condition that it can produce explosives needed by the United States in the event of an emergency, so that it can be turned over to the United States.

Mr. QUIN. He obligates himself to keep that plant in working condition with the personnel and the officers there so that it may be turned over to the United States Government, or to the War Department, in case of emergency?

Gen. WILLIAMS. And to pay a profit of 8 per cent. He told the Secretary of War that unless he got 8 per cent profit he would not operate it.

Mr. QUIN. But he would have it ready, so that if somebody just blew a whistle everybody would go to work and turn out nitrates.

Gen. WILLIAMS. Nothing like that ever happened.

Mr. QUIN. That is what he says in this proposition. He does not use that language, but that is the effect of it, is it not?

Gen. WILLIAMS. No, sir; I do not think so. If that were all there were to the proposition of getting munitions, it would be a very simple proposition indeed.

Mr. QUIN. But that would be a part of it?

Gen. WILLIAMS. He will not make explosives there at all during this time.

Mr. QUIN. But at this time we are getting it from Chile, or from these coke-oven plants?

Gen. WILLIAMS. Yes; we get nitrate, but in so far as explosives are concerned he would not during peace times, as I understand it, actually manufacture any explosives at all. He would maintain the portion of the plant that is needed to make the explosives.

Mr. QUIN. In other words, he will maintain it for the purpose Congress put it up for?

Gen. WILLIAMS. Yes; but in whatever way he intends to maintain it, it will take time to get the product for explosives because of the fact that the process beyond the point where you make ammonia will not be in operation; there will be no organization, nobody will be trained, so that you will have to get your organization and train them to go ahead and make this particular product.

Mr. QUIN. That is, to turn nitrate into explosives?

Gen. WILLIAMS. No, sir; you do not turn nitrate into explosives.

Mr. QUIN. Mix it with T. N. T.

Gen. WILLIAMS. No; the thing that happens here is that the process for making ammonium sulphate and the process for making ammonium nitrate are the same up to a certain point. Up to that point you would have an organization and machinery and a plant working, but from the point where you get your ammonia on until you produce the ammonium nitrate the plant would not be in operation in peace time.

Mr. QUIN. That would be ready, would it not?

Gen. WILLIAMS. Yes; it would be ready.

Mr. QUIN. That is all the Government could do with it?

Gen. WILLIAMS. That is all the Government would do.

Mr. QUIN. My friend, Brother Miller, seems to have engendered a special hostility against Dam No. 3. If Dam No. 3 is completed, or constructed, any sensible man knows it is going to back the water up into the Tennessee River and other streams. Is that not true?

Gen. WILLIAMS. Yes.

Mr. QUIN. That water will be held in reserve for the dry season of the year to keep a normal supply running at the maximum rate for Dam No. 2?

Gen. WILLIAMS. I do not know about that, the Chief of Engineers can give you that information.

Mr. QUIN. That is a reasonable conclusion to reach, is it not?

Gen. WILLIAMS. I understand the building of Dam No. 3 would not increase the primary power of Dam No. 2.

Mr. QUIN. That is one of the purposes of Dam No. 3, is it not?

Gen. WILLIAMS. No; not as I understand it. But I am not familiar with it.

Mr. QUIN. Furthermore, the construction of Dam No. 3 will make navigable certain waters above there that would not be navigable above that.

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. Then, under Mr. Ford's proposition, you have, out of this estimated scrap value of something over $8,000,000, a plant which has been estimated by the Secretary of War to be worth $7,200,000. That is nitrate plant No. 2, and that is the estimated amount it is stated to be worth on page 20 of the Secretary's report to Congress.

Gen. WILLIAMS. Yes, sir; that is right.

Mr. QUIN. Mr. Ford is asking the Government to let him advance $5,000,000 under that proposition in the periods named, the Government to construct and finish Dam No. 2 and Dam No. 3 at an estimated cost of between $42,000,000 and $50,000,000, as I understand it. You do not know what he is going to do, so far as damming up other places there is concerned and making the water supply better, do you?

Gen. WILLIAMS. No.

Mr. QUIN. Mr. Parker seems to think it would cost more to make fertilizer there than it ever did before. Do you not believe that Mr. Ford can make certain by-products as a result of his investment at this place, such as aluminum and other metal products that will make this fertilizer product a mere waste, so far as expense is concerned, at $8 or $10 a ton; is that not possible?

Gen. WILLIAMS. No, sir; I have no such idea as that.

Mr. QUIN. I believe they can do it, and the farmers believe it too. Do you not believe that if this proposition is accepted Mr. Ford can take the power from these dams and transmit electric current several hundred miles away from there; that is, in addition to what he needs?

Gen. WILLIAMS. Oh, yes.

Mr. QUIN. Then, that would develop manufacturing enterprises in all the surrounding States within a reasonable distance, would it not?

Gen. WILLIAMS. It would encourage them.

Mr. QUIN. If those manufacturing enterprises can get cheap current with coal at $10 or $12 a ton, would that not be a reasonable proposition?

Gen. WILLIAMS. That is an important element of the cost.

Mr. QUIN. Then, the construction of the dam would improve and increase navigation?

Gen. WILLIAMS. Yes.

Mr. QUIN. That would help all the territory both above and below Muscle Shoals?

Gen. WILLIAMS. I should think so.

Mr. QUIN. And commercial activities, agricultural interests, and everything else would be bound to be helped?

Gen. WILLIAMS. Yes.

Mr. QUIN. This man Ford has made a success in everything he has entered, has he not?

Gen. WILLIAMS. Undoubtedly.

Mr. QUIN. It is no chimerical dream with him?

Gen. WILLIAMS. No.

Mr. QUIN. He has one of the best factories in the Unites States, and now he has succeeded in the railroad business, considering the short time he has been in it, has he not?

Gen. WILLIAMS. That, I should think, would require analysis.

Mr. QUIN. He has succeeded so well in the railroad business that he tried to get the Interstate Commerce Commission to reduce the rates on his railroad, which they refused to allow him to do, and he has reduced the employees on the railroad from 2,700 to 1,600, and raised all of their salaries. Does that not show that he is a man of more than ordinary ability? If he could do that, while the other roads were crying that they had to increase their rates and decrease the salaries of their employees, do you not think there is some chance for Mr. Ford to decrease the price of commercial fertilizer to the agricultural classes of the country by the development of this project?

Gen. WILLIAMS. I see no relation between the one and the other.

Mr. QUIN. I think there is a relation between them, General. Mr. Ford does not propose, as I understand it, to hold this for himself and his estate, as a profit-making proposition, does he?

Gen. WILLIAMS. He stipulates that in the operation of nitrate plant No. 2, he will not make more than 8 per cent profit, but he said to the Secretary of War in an interview with reference to making a profit, that he will not operate it unless he does make a profit, and I take it that he means he must make a profit on the whole enterprise.

Mr. QUIN. As I understand it, this gentleman wants to set an example to the people of the United States as to what can be done.

Gen. WILLIAMS. My understanding is that the operation of nitrate plant No. 2 is not necessarily tied up with the rest of it, according to his statement to the Secretary of War. There would be various elements of the enterprise, and if one part were not successful, he would lop it off.

Mr. QUIN. Mr. Ford proposes that the Government would have this back at the end of 100 years?

Gen. WILLIAMS. It is a lease.

Mr. QUIN. He wants the right of renewal.

Gen. WILLIAMS. It is a lease.

Mr. QUIN. He wants the right of renewal, with his estate operating this after he is gone. He proposes to keep in operating condition and turn over to the Government in time of emergency this plant, the estimated scrap value of which has been put at $7,200,000. Do you not believe, laying aside all benefit to the people and just considering the benefit to the Government for the purpose of securing nitrates in case of an emergency or in case of war, that it is a good proposition?

Gen. WILLIAMS. It is of value; yes.

Mr. QUIN. You and I both believe we ought to keep the nitrate plant ready.

Gen. WILLIAMS. Yes; I should not recommend that this plant be not retained. If Mr. Ford's offer is not accepted, then our recommendation would be that nitrate plant No. 2, with its steam power plant, be retained.

Mr. QUIN. Then you would either have to maintain it at a cost to the Government or you would have to lease it to somebody else.

Gen. WILLIAMS. We could lease the power plant for a sufficient amount to maintain the rest of it.

Mr. QUIN. There could not be a profit on it?

Gen. WILLIAMS. No, sir; there would be no profit.

Mr. QUIN. Under Mr. Ford's proposition you have the element of navigation, you have the element of industrial development, not only for the immediate territory but you have all the prospective development in the territory surrounding that country for 700 miles. If the proposition stated by my friend, Mr. Miller, is true, would you not cut out navigation and cut out development and have nothing there except the power plant?

Gen. WILLIAMS. No, sir; I do not think that follows, because you have the steam plant there to be operated in connection with the dam.

You could very materially increase your primary power, and then you would have a considerable period during the year when you would have a large excess of power beyond what would be needed for the nitrate plant.

Mr. QUIN. It would not be sufficient to carry out a great program. If you went ahead and built Dam No. 3 you would have water for the very periods of the year when it would be needed.

Gen. WILLIAMS. Dam No. 3 may very materially increase your power.

Mr. QUIN. The Government—and I believe righteously so—has irrigated the land of the farmers in the West, has it not?

Gen. WILLIAMS. Yes.

Mr. QUIN. I believe it has done some of that work in Mr. Miller's State. I believe in that. We turn the water on these arid lands and that fertilizes them. The Government, through its agencies, is turning the water on that land. General, do you not believe the Government owes that same responsibility and duty to other people of the country, to give the farmers fertilizer from this source or some other source, just as the Government turns water on the arid lands?

Gen. WILLIAMS. That is a matter of governmental policy which I think I am not competent to pass on.

Mr. QUIN. Mr. Parker suggested that the coke ovens could supply this ammonium sulphate. How much do they supply now?

Gen. WILLIAMS. The capacity of the by-product coke ovens is about 500,000 tons of ammonium sulphate a year. This plant has a capacity of 200,000 tons.

Mr. QUIN. With this plant operating and producing, say, 200,000 tons, how many tons of fertilizer would that be?

Gen. WILLIAMS. I do not know, sir.

Mr. QUIN. About three or four million tons, would it not?

Gen. WILLIAMS. I could not tell you; I do not know the formula for fertilizer.

Mr. QUIN. This product comes out in a concentrated form, as I understand it.

Gen. WILLIAMS. It comes out as sulphate of ammonia, which is an ingredient of fertilizer.

The CHAIRMAN. But it is not fertilizer?

Gen. WILLIAMS. No, sir; it is not.

Mr. QUIN. It is the basis of fertilizer. You understand, do you not, that certain plants take it out of the atmosphere?

Gen. WILLIAMS. I understand there are three essential elements that go into fertilizer—phosphorus, potassium, and nitrogen.

Mr. QUIN. And this community down there at Muscle Shoals has all three of them? Phosphorus is there in great quantities, is it not?

Gen. WILLIAMS. There is phosphorus rock in Tennessee.

Mr. QUIN. And limestone is in the quarries there.

Gen. WILLIAMS. Yes.

(Thereupon the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF MAJ. GEN. C. C. WILLIAMS, CHIEF OF ORDNANCE—Resumed.

Mr. QUIN. General, did you find out during the recess the cost of construction of that part of the plant that the Alabama Power Co. put up. You said you did not know whether it was 10 or 6 per cent, but you thought it was 6 per cent.

Gen. WILLIAMS. Six per cent, sir.

Mr. QUIN. Could you figure out in dollars and cents how much it was then that the Alabama Power Co. received from the Government for its work in that construction?

Gen. WILLIAMS. The contract provides that "the total of said fee shall not exceed $225,000." I think that was all paid.

Mr. QUIN. Then the Alabama Power Co. received from the Government $225,000 for its services in that construction work.

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. Under the contract of the Ordnance Department or the Government with the Alabama Power Co. you stated they were not in position and did not furnish during the war under that contract any power because of the fact that the war closed as early as it did; is that true, or did I misunderstand you?

Gen. WILLIAMS. Very little power, if any, was furnished, for the nitrate plant itself was not ready to take power until just shortly before the armistice. The Alabama Power Co. had obligated themselves to put their whole system back of this plant and furnish us with, I think, 30,000 kilowatts. It does not necessarily follow that we got power from this particular establishment.

Mr. QUIN. In that construction, wherein four million and some odd dollars was expended, the Government put up the money and not the Alabama Power Co.

Gen. WILLIAMS. The Government put up the money; yes, sir.

Mr. QUIN. And they then received the sum of $225,000 for such work as their fees and profits. On the question you were discussing about the moral obligation on the part of the Government to these people touching that contract, do you not think that the Government owes a moral obligation to the taxpayers that put up that money and are continuing to put it up?

Gen. WILLIAMS. My point of view, Mr. Quin, is that the Government, through its accredited agents, entered in good faith into a contract with the Alabama Power Co., and, so far as it knew, in accordance with the law; and I think the Government, when it entered into that contract, assumed an obligation to carry it out.

Mr. QUIN. And you do not think the $225,000 that they received would be a sufficient compensation and warrant that contract to be nullified without additional compensation now?

Gen. WILLIAMS. Inasmuch as the $225,000 was itself a part of the contract, I can not see that it has any relation whatever to the obligation which the Government undertook.

Mr. QUIN. In the estimate for scrapping this entire outfit at Muscle Shoals for $8,812,000, do you base that on the same type of estimate that the other plants were salvaged?

Gen. WILLIAMS. Yes, sir; we arrive at that figure through our experience with other plants.

Mr. QUIN. Well, take Hog Island. We lost a great sum of money there; was it based on that work?

Gen. WILLIAMS. No, sir; I had nothing to do with that.

Mr. QUIN. That was not under the Ordnance Department?

Gen. WILLIAMS. No, sir.

Mr. QUIN. This West Virginia plant was under the Ordnance Department.

Gen. WILLIAMS. At Nitro?

Mr. QUIN. Yes; how about that?

Gen. WILLIAMS. Our experience there was taken into consideration and our experience at Old Hickory and various other places where we have salvaged large plants.

Mr. QUIN. We lost a great deal of money on the West Virginia business, did we not? About $100,000,000 was put into that?

Gen. WILLIAMS. No, sir; we put in there about $60,000,0000, as I remember the figures, and we expect to get out of it anywhere from eight to eleven million dollars.

Mr. QUIN. How much did you have in the Tennessee plant, the Old Hickory plant, I believe they call it.

Gen. WILLIAMS. We put in there about $80,000,000 and we are getting out of that about $3,500,000.

Mr. QUIN. $3,500,000 out of $80,000,000, about what per cent is that?

Gen. WILLIAMS. That would be about 4½ per cent.

Mr. QUIN. To scrap the outfit at Muscle Shoals for the sum named would mean the dismantlement and abandonment of the whole business there.

Gen. WILLIAMS. Yes, the whole thing. That is what we mean by scrapping.

Mr. QUIN. And the bats would fly over there and nest there instead of having smokestacks and having 1,000,000 men at work there.

Gen. WILLIAMS. There would be nothing left there for the bats to fly over or to nest in.

Mr. QUIN. They would have to make their nests on the bare ground, whereas Mr. Ford stated when he had his enterprise completed it would employ 1,000,000 men. If that be true, and he pays about $5 a day, that would be about $5,000,000 a day in pay rolls down in that community, would it not, General?

Gen. WILLIAMS. Yes, sir.

The CHAIRMAN. Of course, that is not officially before us, Mr. Quin.

Mr. QUIN. No, sir; but that is the statement he made. I have no means of knowing whether it is true or not.

The CHAIRMAN. Of course, Mr. Ford's representatives will be before the committee on Monday and undoubtedly will state just what is intended.

Mr. QUIN. We know he is going to employ some labor down there. He is bound to do that.

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. And it is bound to be a good thing for that territory, especially.

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. Under his offer $5,000,000 will be received by the Government for the property and the Government will have nitrate plant and power plant No. 2 at its disposal, as you stated this morning, in case of war, or threatened war, on the basis of 8 per cent profit to Mr. Ford.

Gen. WILLIAMS. The 8 per cent profit, as I understand it, is what he limits himself to in the case of producing fertilizer.

Mr. QUIN. That was my understanding, but I asked the question this morning about turning it over to the Government to operate——

Gen. WILLIAMS (interposing). I do not understand that the 8 per cent applies to that. The nitrate plant No. 2 will be Mr. Ford's property, and when that is taken over by the Government in case of a crisis, undoubtedly, there will be negotiations between the Ford Co. and the United States as to the terms under which it will be taken over.

Mr. QUIN. Then, General, you do not mean to state, as I understand it, that he would get 8 per cent out of the Government during a war.

Gen. WILLIAMS. No, sir.

Mr. QUIN. Or in case of an emergency when it was turned over.

Gen. WILLIAMS. No, sir.

Mr. QUIN. And if he did get that it would be a heap more reasonable than what we got from other concerns during our last experience from 1917 to 1919.

Gen. WILLIAMS. I do not think that necessarily follows.

Mr. QUIN. It may not necessarily follow, but then you know something about what it cost your department and you know what other departments had to pay for a great many things where the Government was hogged. You could not help it and we could not help it, but it was hogged at Hog Island, and at a great many other places, and by these airplane concerns in Ohio and elsewhere. Now, the record will show your answer to be that under his proposition, if accepted by the Congress and the Government, plant No. 2 and the power plant at No. 2 will be under the control of the Government through the War Department at whatever terms the Government sees proper to make, or they can take it for nothing if they want to.

Gen. WILLIAMS. No, sir; they could not take it for nothing.

Mr. QUIN. Well, we conscripted men, and I believe if we are going to conscript men we should go out and conscript everything we need in case of war.

The CHAIRMAN. The gentleman did not believe in conscripting men for the war.

Mr. QUIN. No, I did not believe in it until they put it up to me that they could not get them in any other way and then I was for conscription, and I do not think we ought to conscript them without conscripting such enterprises as this, if the Government needs them. That is my honest judgment about it. Gen. Williams, $7,250,000 is the estimated value of nitrate plant No. 2 and the power plant for scrapping. How much more is the total amount of all of the business at Muscle Shoals for scrapping?

Gen. WILLIAMS. $1,562,000.

Mr. QUIN. Then Mr. Ford or his company will be giving you—and by you I mean the Government—all of the estimated value except $1,220,000, and the Government will have for its own use the main thing it needs for war, namely, nitrate plant No. 2.

Gen. WILLIAMS. No, sir; because I should have no idea that the Ford company would scrap these properties. They would dispose of them as going concerns if they got control of them, I take it.

Mr. QUIN. You misunderstood me. I think that is what they want to do with them, but I said that for scrap purposes—I am trying to get the difference between what we would be out.

Gen. WILLIAMS. Then I think you must take it on the basis I suggested, that they would make the best disposition of those properties they could, and the best disposition, as we indicate by these figures, is not to scrap them.

Mr. QUIN. You do not know whether they would be scrapped or not.

Gen. WILLIAMS. I can not imagine they would scrap them.

Mr. QUIN. You do not know that?

Gen. WILLIAMS. Because that would not be the way they would get the best return.

Mr. QUIN. In the analysis presented by the Secretary of War, the question of lease for 100 years came up.

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. And he is against it and believes in a 50-year lease. Have you a judgment on that proposition, General?

Gen. WILLIAMS. No, sir; I have no particular thoughts on the matter that I think would be of value.

Mr. QUIN. It would be immaterial to you which was adopted, and you would not object to a 100-year lease if we decided in favor of the Ford proposition?

Gen. WILLIAMS. No; we would raise no objection, particularly.

Mr. QUIN. What you want is that nitrate plant to be kept there ready for an emergency.

Gen. WILLIAMS. That is our prime concern in so far as the Ordnance Department is concerned, because it has to do with preparation for furnishing the materials of war.

Mr. FISHER. General, a good deal has been said about the options that were given to the two big corporations that did work for the Government in that section. You are very familiar with those options, are you not; that is, as to the phraseology of the contracts reserving the options?

Gen. WILLIAMS. I am not sufficiently familiar to discuss them in detail.

Mr. FISHER. From what you know of them, do you consider that the Government, as it stands now, without an expression from those companies, is in a position to accept the Ford offer; that is, in the absence of a declaration from those two companies, is the Government in a position to accept the Ford offer?

Gen. WILLIAMS. It seems to me that as parties at interest, their side of it should certainly be heard and considered.

Mr. FISHER. Have your had any communication with the representatives of either of those corporations to determine their attitude about the exercise of the options; that is, whether they expect to exercise that right or not?

Gen. WILLIAMS. I think the Secretary of War testified that the Air Nitrates Corporation said they would desire to exercise their option, and also that he expected the Alabama Power Co. would desire to do the same thing.

The CHAIRMAN. Mr. Fisher, I would say to you that both companies have written the chairman of the committee asking to be heard on the proposition.

Mr. FISHER. On the question of section 16 of the Ford contract, I would like to ask you whether or not you consider that if the contract is carried out, that the provisions as indicated in section 16 would give the United States Government what you would consider as preparedness in the way of nitrates for munitions in case of an emergency?

Gen. WILLIAMS. It would very materially contribute to preparedness for nitrates in so far as munitions are concerned.

Mr. FISHER. Has the Ordnance Department or the War Department a laboratory with officers or representatives studying these chemical problems and making experiments such as would be offered to the Government under section 16?

Gen. WILLIAMS. During the war we started a chemical research laboratory along these lines at the American University, just out of Washington. That was maintained by the Ordnance Department until last July, when we turned it over to the Agricultural Department. That laboratory is in operation now.

Mr. FISHER. What would you consider the approximate cash value to the Ordnance Department of a plant that is functioning with skilled personnel, as is indicated in section 16?

Gen. WILLIAMS. The nearest answer I can give to that would be the cost to install this plant, because Mr. Ford's offer provides for the maintenance of that plant at approximately its capacity output. Now, then, under war conditions, I can see no reason to suppose that we are going to do things very much cheaper, relatively, in any crisis to come, in the course of the next 25 or 30 years than we did in this crisis, and, therefore, I should say that the cost of this plant would represent practically the cash value.

Mr. FISHER. If the Ford offer is not accepted, is it the plan of the Ordnance Department to keep No. 2 in a stand-by condition?

Gen. WILLIAMS. It is; we recommend it.

Mr. FISHER. Is a plant in a standby condition, such as you propose to keep plant No. 2, comparable as a ready plant for the production of nitrate with one that is a going concern as indicated by section 16?

Gen. WILLIAMS. No; it is not.

Mr. FISHER. I would like to know whether or not the Ordnance Department, in the failure of the acceptance of the Ford offer, has a plan for nitrate preparedness.

Gen. WILLIAMS. Our plan is simply the retention of this plant in a standby condition ready to be put in operation as soon as an organization can be gotten together and started going. We estimate it will take about three months to start production and five months before we would be producing to capacity.

Mr. FISHER. Whereas, if the Ford offer was accepted, it is ready within five days.

Gen. WILLIAMS. No; not within five days, I should say, because under the Ford offer only a portion of the process would be carried on normally, and the remainder would have to be put into operation, and that of necessity would take time.

Mr. WRIGHT. General, you think it would be contrary to sound military policy to abandon nitrate plant No. 2?

Gen. WILLIAMS. I think it would be contrary to a sound military policy; yes, sir.

Mr. WRIGHT. And would you not further recommend if the Ford proposition is not accepted, that the Government complete Dam No. 2 to be used in conjunction with nitrate plant No. 2?

Gen. WILLIAMS. That does not come within my province at all. The Secretary of War has stated he would recommend it and has so stated in the record.

Mr. WRIGHT. Do you not think that cheaper power is essential there than steam power?

Gen. WILLIAMS. That would cheapen the product.

Mr. WRIGHT. And as I understand you, the fertilizer feature of this project is one attended with great possibilities.

Gen. WILLIAMS. Well, I do not see the very great possibilities of it so far as cheapness of production is concerned. The thing to my mind that offers the greatest possibilities would be the research laboratory that Mr. Ford says he is going to put in operation down there. With the fixation of nitrogen in the stage of development in which it is now, I do not think anybody can say what process is going to be the process that will be used 20 years from now.

Mr. WRIGHT. That is largely what I meant by great possibilities.

Gen. WILLIAMS. Yes; there are great possibilities in the question of the fixation of nitrogen.

Mr. WRIGHT. And in the development of this industry?

Gen. WILLIAMS. Yes, sir; I think so.

Mr. STOLL. General, who first acquired the Warrior plant at Gorgas, the Alabama Power Co. or the Government?

Gen. WILLIAMS. The property, the land on which the plant is built there, was at the beginning of the war, and is now, the property of the Alabama Power Co.

Mr. STOLL. The Government did own it for awhile?

Gen. WILLIAMS. The Government has never owned it.

Mr. STOLL. The Government has never owned the land?

Gen. WILLIAMS. No, sir.

Mr. STOLL. I believe you have stated that that plant is about 88 miles from nitrate plant No. 2.

Gen. WILLIAMS. Yes, sir.

Mr. STOLL. What is the nearest point at Muscle Shoals to this Warrior steam plant?

Gen. WILLIAMS. Muscle Shoals is about 2 miles from the Muscle Shoals No. 2 Dam.

Mr. STOLL. Then, how did this Warrior steam plant at Gorgas get connected up with the Muscle Shoals project if it is 88 miles away from it?

Gen. WILLIAMS. By building a transmission line.

Mr. STOLL. For what purpose?

Gen. WILLIAMS. For the purpose of transmitting power from the Alabama Power Co. to nitrate plant No. 2.

Mr. STOLL. For the manufacture of nitrates?

Gen. WILLIAMS. Yes, sir.

Mr. STOLL. Did you not have a steam plant there to generate the electricity?

Gen. WILLIAMS. We had one in process of construction which was not completed until after the war was over.

Mr. STOLL. The Alabama Power Co. is furnishing electricity to various portions of that country?

Gen. WILLIAMS. Yes, sir.

Mr. STOLL. And in November of last year the Alabama Power Co. leased the steam plant at plant No. 2, did they not?

Gen. WILLIAMS. Yes, sir; in November of last year.

Mr. STOLL. Did they ever use it?

Gen. WILLIAMS. I do not think they have put it into operation. My information is that they put a gang of men in there to put it in operation, but at about the time they were ready, the rains came and increased their water power to the point where it was not necessary for them to throw in that plant.

Mr. STOLL. Nitrate plant No. 2 produces, I believe you stated, 110,000 tons annually?

Gen. WILLIAMS. Of ammonium nitrate; yes, sir.

Mr. STOLL. That will make how much sulphate of ammonia?

Gen. WILLIAMS. About 215,000 tons, I am informed.

Mr. STOLL. You sold some of your nitrates there, did you not?

Gen. WILLIAMS. We produced only a very small amount and I do not think we have yet sold any. We made about 1,700 tons of the ammonium nitrate, and in addition to that about 2,000 tons of cyanamid.

Mr. STOLL. Did you have any Chilean nitrate there?

Gen. WILLIAMS. No, sir.

Mr. STOLL. What are the different parts of commercial fertilizer besides the sodium phosphate?

Gen. WILLIAMS. I know very little about fertilizers, Mr. Stoll. As I understand it, the ammonium sulphate is simply one of the ingredients that carry the nitrogen.

Mr. STOLL. Is not that about the hardest one to get?

Gen. WILLIAMS. For the fixed nitrogen we are dependent now on the sodium nitrate that comes from Chile; that is the largest source of supply in the world. There is also the ammonia recovered at the by-product coke ovens and the gas works.

Mr. STOLL. And that is the hardest ingredient the fertilizer people have to get, is it not?

Gen. WILLIAMS. I think so, sir, although I am not positive about that.

Mr. STOLL. If we had a supply in this country, that would tend to solve the fertilizer problem?

Gen. WILLIAMS. Yes, sir.

Mr. STOLL. As I understand it, only about 3 per cent of sodium phosphate is used in fertilizer, and there is a little over 7,000,000 tons of fertilizer used in the United States; would not that 200,000 tons go a long ways toward supplying the sodium phosphate when there is only 3 per cent used?

Gen. WILLIAMS. I think that 3 per cent which you refer to is the nitrogen content.

Mr. STOLL. How is that?

Gen. WILLIAMS. That 3 per cent is the nitrogen content and the percentage of weight of the ammonium sulphate fertilizer itself would be very considerably more than that.

Mr. STOLL. I thought the common brand of fertilizer was 8, 3, and 3.

Gen. WILLIAMS. Yes, sir.

Mr. STOLL. There are 2,000 pounds in a ton of fertilizer and the great part of the 2,000 pounds is bulk that is simply used to distribute the ingredients put into it, and as I understand it, there is only 3 per cent of the fertilizer that is sodium phosphate.

Gen. WILLIAMS. My understanding of the meaning of that formula is this: You have three elements that are essential to plant life. You have the phosphorus, nitrogen, and potassium. Now, the formula of 8, 3, and 3 refers to the percentage by weight of those three elements in the total weight of the fertilizer.

Mr. STOLL. I will put it in this way: You do not know how many pounds of ammonia there would be in a ton of commercial fertilizer?

Gen. WILLIAMS. Of ammonium sulphate, no, sir, I do not. That could be figured back very easily. The figures I have here indicate that for the average nitrogen containing fertilizer sold in 1919 there were 56.7 pounds of ammonium sulphate per 2,000 pounds of fertilizer.

Mr. STOLL. How many pounds?

Gen. WILLIAMS. 56.7 pounds.

Mr. STOLL. In a ton?

Gen. WILLIAMS. In a ton.

Mr. STOLL. If there are 200,000 tons that would make about how many ton of fertilizer? Would not that be around 8,000,000 tons?

Gen. WILLIAMS. I am inclined to think there must be something wrong about sthat figure.

Mr. STOLL. Of course, I do not know. They are the figures you give. There are about 7,000,000 tons of commercial fertilizer used and if we get enough of the ammonia there to make 8,000,000 tons, we are doing the farmers a considerable service, do you not think?

Gen. WILLIAMS. Assuming those figures are correct and you can produce the ammonium sulphate at less than the present market prices. Mr. Chairman, I would like to have a chance to look into this matter of the formulas and the amount of various ingredients further and correct my statement in the record accordingly.

The CHAIRMAN. If there is no objection, that may be done.

(The statement referred to follows:)

"Ammonium sulphate furnishes only a part of the nitrogen in commercial fertilizers. Among other nitrogenous materials are nitrate of soda, cyanamid, slaughterhouse tankage, and cottonseed meal. In 1919, according to the census figures, the average mixed fertilizer contained 45.7 pounds of nitrogen. The 56.7 pounds of ammonium sulphate furnished 11.7 pounds of the nitrogen. Nitrate of soda furnished 8.4 pounds of nitrogen, and cyanamid 1.3 pounds. These chemical or inorganic materials furnished thus a total of 21.4 pounds of nitrogen. The other 24.3 pounds was furnished by the organic materials, such as cotton seed meal, and slaughter house tankage.

"If all of the 21.4 pounds of 'inorganic' nitrogen had been furnished by sulphate of ammonia, there would have been 104 pounds of sulphate used per ton of fertilizer. On this basis 215,00 tons of sulphate would furnish enough nitrogen for some 4,000,000 tons of fertilizer.

"If the entire 45.7 pounds of nitrogen had been furnished by sulphate, it would have required 222 pounds of sulphate per ton of fertilizer. On this basis 215,000 tons of sulphate would furnish all the nitrate for nearly 2,000,000 tons of fertilizer."

Mr. STOLL. Mr. Chairman, I have here a table furnished me by the Department of Agriculture that gives the amount of fertilizers used by the various States, and I would like to put it in the record at the proper place.

The CHAIRMAN. If there is no objection, that may be done.

FERTILIZER TONNAGE BY STATES.

Following is the list of States, showing the consumption of fertilizers for the fiscal years ending in 1913, 1914, 1915, 1916, 1917, 1918, 1919, and 1920, compiled from the most reliable statistics that are obtainable. In some of the States there are absolutely no accurate figures available.

State.	Fiscal year ending—	1913	1914	1915	1916	1917	1918	1919	1920
		Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Alabama	Oct. 1	434,730	592,200	302,350	206,000	210,000	289,990	297,903	388,341
Arizona[1]	June 30	600	650	650	600	500	500	500	500
Arkansas	Sept. 30	52,000	84,850	26,396	65,600	58,500	88,500	64,427	81,875
California	June 30	36,000	39,471	31,540	29,415	43,964	32,036	43,126	58,636
Colorado[1]	Dec. 31	500	500	600	1,000	1,000	1,000	1,000	1,000
Connecticut[1]	do	62,000	74,000	80,000	73,000	78,000	80,000	65,000	65,000
Delaware[1]	do	50,000	55,000	45,000	45,000	50,000	54,000	30,398	61,537
Florida	do	213,728	240,812	208,782	212,250	214,088	197,954	250,613	272,316
Georgia	do	1,120,693	1,282,088	872,979	741,347	895,897	923,020	990,919	978,090
Idaho[1]	July 1	200	500	500	500	500	500	500	500
Illinois[1]	Apr. 30	30,000	40,000	35,000	42,000	45,000	45,000	45,000	45,000
Indiana	Dec. 31	193,899	219,000	156,152	132,159	156,000	244,340	241,000	230,184
Iowa[1]	Apr. 30	3,500	4,200	5,100	5,000	5,000	5,000	5,000	5,000
Kansas	Dec. 31	7,380	9,460	10,600	7,940	7,600	8,000	16,937	12,650
Kentucky[1]	do	75,000	83,000	85,000	62,000	93,000	128,000	103,000	90,000
Louisiana	Aug. 31	98,778	90,588	73,420	96,426	98,264	81,025	97,724	95,864
Maine[1]	Dec. 31	160,000	168,000	150,000	155,000	160,923	155,000	156,000	168,000
Maryland	do	169,000	183,350	168,000	154,000	191,900	173,000	174,500	175,000
Massachusetts[1]	June 30	51,000	54,000	56,000	55,000	64,000	68,000	61,000	61,450
Michigan[1]	Dec. 31	57,985	60,000	65,000	70,000	91,455	78,000	103,264	112,616
Minnesota[1]	do	3,500	3,800	4,000	4,500	4,500	5,000	5,000	5,000
Mississippi	Oct. 1	128,050	127,400	85,414	75,667	76,717	104,700	110,000	139,000
Missouri[1]	Dec. 31	60,000	65,000	57,000	41,000	65,000	90,000	91,000	120,332
Montana[1]	No law	800	900	1,000	1,000	1,000	1,000	1,000	1,000
Nebraska[1]	do	500	500	500	500	500	500	500	500
Nevada[1]	do	800	950	1,000	1,000	1,000	1,000	1,000	1,000
New Hampshire[1]	Apr. 30	18,000	20,000	16,000	18,000	20,000	18,000	14,000	17,000
New Jersey	Oct. 31	156,661	155,414	153,075	129,800	176,483	153,198	149,485	164,820
New Mexico[1]	No law	200	200	500	500	500	500	1,500	1,500
New York[1]	Dec. 31	380,000	420,000	400,000	400,000	420,600	430,000	410,000	400,000
North Carolina	Dec. 1	840,447	872,820	647,188	650,000	849,728	921,962	961,238	1,221,796
North Dakota[1]	Dec. 31	500	550	600	700	1,000	1,000	1,000	1,000
Ohio	do	183,476	203,000	225,000	187,848	165,857	219,328	355,236	300,000
Oklahoma[1]	June 30	2,000	2,000	2,000	3,000	3,000	3,000	4,000	4,000
Oregon[1]	Aug. 31	4,500	6,300	6,500	6,500	7,000	6,000	7,500	5,500
Pennsylvania	Dec. 31	340,000	381,900	316,319	268,455	334,309	340,898	340,000	326,864
Porto Rico[1]	June 30	18,836	18,164	20,000	37,725	45,767	40,811	21,815	20,000
Rhode Island[1]	Mar. 31	9,000	12,500	11,000	12,000	11,500	10,000	9,000	10,000
South Carolina	June 30	918,338	1,096,728	670,610	833,624	850,796	1,064,886	1,033,887	1,253,890
South Dakota[1]	July 1	700	1,000	1,500	1,500	2,500	2,500	3,000	3,000
Tennessee	May 31	84,060	93,550	77,390	91,128	99,584	113,000	109,366	112,262
Texas	Sept. 1	75,500	77,490	17,500	39,845	40,500	58,000	46,000	56,700
Utah[1]	Dec. 31	1,000	1,200	1,500	1,000	1,000	1,000	1,000	1,000
Vermont[1]	June 30	14,500	18,000	13,500	15,000	14,500	16,000	18,000	20,000
Virginia	Dec. 31	412,434	437,808	406,077	369,520	496,217	430,549	421,484	429,024
Washington[1]	Mar. 31	1,500	2,400	3,000	3,000	4,000	4,010	4,000	4,000
West Virginia	June 30	31,852	35,475	46,010	40,000	41,000	59,036	63,000	121,052
Wisconsin[1]	Dec. 31	4,000	4,500	5,000	5,000	6,500	7,500	10,000	12,000
Wyoming[1]	No law	200	400	500	500	500	500	500	500
Total		6,544,345	7,340,528	5,563,212	5,390,549	6,206,543	6,756,743	6,891,322	7,654,239
Hawaii	June 30	67,000	80,000	70,000	65,000	80,000	64,000	71,000	70,000

[1] Estimated.

Mr. PARKER. General, I asked you about the cost of manufacture, and I would like for you to put in your detailed statement the cost by water power and steam, so that I can see how much you allow per horse power. I do not suppose you allow much per horse power for the water power.

Gen. WILLIAMS. I will give you a detailed statement of that for the record.

Mr. PARKER. I wanted to see whether you allowed any cost for the water power.

Gen. WILLIAMS. Yes, sir; that is taken into consideration. That is shown in the cost per ton as we estimate it.

Mr. PARKER. Then I will wait until I get your detailed statement.

Detailed estimate of cost of sulphate of ammonia and nitrate of ammonia at United States nitrate plant No. 2, Muscle Shoals, Ala.

SULPHATE OF AMMONIA.

	Quantity per ton.	Unit cost.	Cost per ton. Using steam power.	Cost per ton. Using water power.
Limestone	1.81 tons	$1.25	$2.26	$2.26
Coke	0.56 ton	6.00	3.36	3.36
Coal	0.23 ton	4.00	.92	.92
Electrodes	39.1 pounds	.05	1.96	1.96
Soda ash	0.034	25.00	.85	.85
Sulphuric acid, 60°	0.96 ton	10.00	9.60	9.60
Miscellaneous materials			1.62	1.62
Supplies and repair parts			2.01	2.01
Steam power	2,973 kilowatt hours	.004	11.89	
Water power	do	.00075		2.23
Steam	2.19 thousand pounds	.285	.62	.62
Compressed air	3.7 thousand cubic feet	.013	.05	.05
Labor (operation)			9.08	9.08
Labor (maintenance)			2.93	2.93
Superintendence			2.30	2.30
Total production cost			49.45	39.79
Bagging and loading (assuming less than 35 per cent of product will be bagged)			.50	.50
Sales				
Research and main office			1.87	1.87
			1.54	1.54
Cost, without royalties			53.36	43.70
Allowance for royalties at 10 per cent, assuming reduction by arbitration			5.34	4.37
Cost, f. o. b. cars, Muscle Shoals, Ala			58.70	48.07

NITRATE OF AMMONIA.

Limestone	3.54 tons	$1.25	$4.43	$4.43
Coke	1.09 tons	6.00	6.54	6.54
Coal	0.42 ton	4.00	1.68	1.68
Electrodes	76.4 pounds	.05	3.82	3.82
Soda ash	0.067 ton	25.00	1.68	1.68
Miscellaneous materials			3.19	3.19
Supplies and repair parts			4.83	4.83
Steam power	6,060 kilowatt hours	.004	24.24	
Water power	do	.00075		4.54
Steam	5.88 thousand pounds	.285	1.68	1.68
Compressed air	51.94 thousand cubic feet	.013	.68	.68
Labor (operation)			16.67	16.67
Labor (maintenance)			6.47	6.47
Superintendence			4.57	4.57
Total production cost			80.48	60.78
Bagging and loading			2.00	2.00
Sales			3.08	3.08
Research and main office			2.55	2.55
Cost, without royalties			88.11	68.41
Allowance for royalties at 10 per cent, assuming reduction by arbitration			8.81	6.84
Cost, f. o. b. cars, Muscle Shoals, Ala			96.92	75.25

NOTES.

A more detailed analysis of certain of the above items will be found in "Hearing before the Committee on Military Affairs, House of Representatives, Sixty-sixth Congress, second session, on H. R. 10329 and S. 3390," 1920.

In the production cost estimates the quantity of raw materials and power used in the manufacture of the several products are based on the actual results of the two weeks' operating test of the plant at one-fifth capacity in January, 1919. The quantity of materials used in the several manufacturing processes were carefully measured and weighed daily and the consumption for the entire period of the test thus determined and the products manufactured carefully determined.

The unit prices of materials are those which existed at the time the estimate was made, in the summer of 1919, and it is believed will prevail as conditions become more stabilized.

Expense for royalties and fees has been figured in accordance with the provisions of the present contracts with the American Cyanamid Co. and its subsidiary, the Air Nitrates Corporation, and with the Air Reduction Co., due consideration being given to arbitration clauses in estimates of cost after June 1, 1921.

These estimates do not include any allowance for interest on capital cost, depreciation, and obsolescence, or taxes and insurance. These estimates are also based upon th assumption that all community arrangements will be self-supporting in so far as current operating expenses are concerned.

The CHAIRMAN. General, do you consider the production of nitrates essential to this country for military purposes?

Gen. WILLIAMS. Undoubtedly; yes, sir.

The CHAIRMAN. And in the building up of Muscle Shoals, your department has taken a very great interest, I assume.

Gen. WILLIAMS. Our department has built all of the establishments that are there now, everything except the dams.

The CHAIRMAN. And it was for the primary purpose of supplying material in case we got into war.

Gen. WILLIAMS. That was the primary purpose of it.

The CHAIRMAN. And all the money that is invested in the plant at Muscle Shoals, I take it, was taken from the appropriations for military purposes?

Gen. WILLIAMS. Armament of fortifications, yes. sir, that is, for nitrate plant No. 2. I think the land on which plant No. 1 is located was paid for out of the $20,000,000 appropriated in 1916.

The CHAIRMAN. And that was the national defense bill, which was a military bill?

Gen. WILLIAMS. Yes, sir.

Mr. QUIN. I would like to ask for the record one question more, and that is, how long was the period of time that the Alabama Power Co. was engaged in constructing the work there for which they received the $4,000,000 plus, or for which that amount was paid?

Gen. WILLIAMS. Approximately one year.

Mr. HULL. General, I do not know but what this question has been answered, or it may be that you can not answer it offhand: but I think, for the record, it should be stated, and that is, provided we accept Mr. Ford's offer or some proposition of that kind, how long would it take to change that plant from a fertilizer plant into a plant for the manufacture of nitrates for high explosives? There has been some question along that line. but I did not hear any definite answer, and I would like to have the record show that.

Gen. WILLIAMS. I think Mr. Ford in his proposition proposes to maintain the plant ready to produce the explosive. The time it would take would be the time it would take to divert the process from producing ammonium sulphate to producing ammonium nitrate, and that should be a comparatively short time; just what length of time I could not state.

Mr. HULL. I think we should have something from the experts to show about how long.

Gen. WILLIAMS. About three months, I should say.

Mr. HULL. As long as that?

Gen. WILLIAMS. Before it would be producing to full capacity.

STATEMENT OF MAJ. GEN. LANSING H. BEACH, CHIEF OF ENGINEERS, ACCOMPANIED BY BRIG. GEN. HARRY TAYLOR, ASSISTANT.

The CHAIRMAN. Gen. Beach, we are considering, as you know, the proposal of Mr. Ford with reference to the Muscle Shoals proposition. I understand that the Engineers have had considerable to do with the building of that plant. Will you kindly state in your own way just what you know about the proposition and what interest the Engineers have in the matter.

Gen. BEACH. The construction or building of Dam No. 2 was intrusted to the Engineer Department, which has charge of river and harbor works throughout the country. This dam was started as a means of reducing the cost of operating the nitrate plants, which had been installed at that locality by another branch of the Government.

The funds which were allotted were from the appropriation for fortification and armament, an appropriation with which the Engineer Department of the Army ordinarily has nothing to do except to build fortifications, and the allotment not having been sufficient to complete the dam, a year ago when we were nearing the end of the funds in hand, we had to ask for an additional appropriation from Congress. That was refused at the last session of the last Congress, and after the present administration took charge of governmental affairs I was directed by the Secretary of War to ascertain whether the completion of this dam and power plant was a practical arrangement or not and to ascertain what I could in regard to that feature of the case and report to him.

I wrote to all the power companies and different parties throughout the country that I thought might be interested in the matter. Mr. Ford's proposition was the only one which was received up to the time it was presented, and I forwarded it to the Secretary of War, as evidence of the fact that the completion of this dam was a practicable undertaking; and he has had charge of the negotiations with regard to Mr. Ford and other parties since that date.

The CHAIRMAN. The Secretary himself has had direct communication with Mr. Ford respecting the turning over of the plant rather than the Chief of Engineers?

Gen. BEACH. Yes, sir. After I forwarded Mr. Ford's proposition to the Secretary of War, he has handled those matters directly. He has had, I believe, four interviews with Mr. Ford or his representatives, at only one of which I was present, because it happened that on the first two occasions I was out of town, and on the last occasion I was not notified, or my office was not notified, until Mr. Ford was in the office, and at that time I was tied up in a conference with officers of the General Staff.

The CHAIRMAN. Is there any special statement that you desire to make to the committee respecting Mr. Ford's offer? As I understand it, the first offer made on July 8, 1921, was made to you and not to the Secretary?

Gen. BEACH. Yes, sir; it was made to me in response to that inquiry which I sent out to all the parties, as I have mentioned.

The CHAIRMAN. About how many letters did you write, or about how many parties did you communicate with?

Gen. BEACH. Probably 10 or 12.

The CHAIRMAN. And the only answer you got was from Mr. Ford?

Gen. BEACH. The only proposition which I received.

The CHAIRMAN. The only proposition, yes.

Gen. BEACH. I sent out this letter:

"The Secretary of War has directed me to ascertain what arrangements can be made to derive a reasonable return upon the investment if the United States completes the dam and hydraulic power plant at Muscle Shoals, Tennessee River.

"If you are interested, I would be pleased to discuss the matter with you at this office at the earliest date that may be mutually determined.

"It is desired to develop the matter and come to a conclusion at as early a date as possible."

That is practically the same letter that the Secretary was requested yesterday to put on file.

The CHAIRMAN. In response to that letter the only offer was the one received from Mr. FORD.

Gen. BEACH. The only, what I would call, genuine offer. I gave as wide publicity to that letter as was possible. A good many papers printed it. I furnished it to the press. I did receive some responses which from their tone and the character of writing were evidently from irresponsible parties.

The CHAIRMAN. Would you mind stating to the committee just what some of those answers were?

Gen. BEACH. One, I remember, was to the effect that the man would be pleased to undertake that if the Government would pay him $1,000,000. Another one was from a man who said that he was accustomed to forming large companies and undertaking matters of great import, and if he could be allowed $40,000 as expense money, he thought he could put it over, and there were others to that effect. I paid no attention to them beyond filing them, for the reason that I felt if the parties were genuinely interested in the matter, they would follow it up and none of them did.

The CHAIRMAN. You heard nothing after the first letter?

Gen. BEACH. I heard nothing from any one of those parties after the first letter. The power companies in the South to whom I wrote replied. The Alabama Power Co. replied under date of May 28. The gist of their letter is really in the final paragraph:

"If, therefore, authority is conferred by Congress to conclude a contract for the use of any part of the power by power companies, we wish to assure you we are ready to work out a mutually satisfactory arrangement looking to the completion of the dam and the disposal of such part of the power as Congress wishes to place in commercial use, desiring now as at all times in the past, to cooperate in every way desired by the United States in working out the matter."

I had several interviews with the officers of the Alal ama Power Co. and they stated that they had always been interested in this proposition. It was a very large and important power development in their territory, and I have understood that they would have been very glad to establish this dam if it had not been beyond their financial resources. They pointed out that they were naturally most interested because any invasion of their field with as large a power plant as this would mean a great deal to them in their business relations with their clients or customers, and they said they did not see their way clear to make a proposition because I was not in a position to state when the power would be available, and the terms on which they could obtain it. I requested them, as I did all the others with whom I had conferences, to make their

own proposition. I was asked by several of them to draw up specifications, but I said that the matter was so large and so complex that I was very much afraid that if I drew up any set of specifications it might hamper the development in some respects rather than facilitate the development of the whole, and they were all invited to come in and make their own propositions to start with, so that we could then work out something definite after their proposition was received.

I found that I was very badly handicapped, as the Secretary found later, by the fact that we could not give these people any definite assurance. We could not come to any contract or definite agreement with them, and that I think may have possibly prevented some definite offers, but Mr. Ford was the only one that came in with a definite response.

To save time I will just file this reply of the Alabama Power Co. and place it in the record if you care to, or it can be read.

The CHAIRMAN. Is that the same letter that the Secretary put in the record yesterday?

Gen. BEACH. Yes, sir; he was requested yesterday to furnish it.

The CHAIRMAN. Then it would simply be a duplication, as that letter is already in the record.

Gen. BEACH. Yes. (See p. 790.)

The CHAIRMAN. The Alabama Power Co. was organized when? Do you know?

Gen. BEACH. No; I do not know the date of organization, but I do know that along in 1912 and 1913 it made a proposition to the United States in regard to taking over of the power at this locality, which was the subject of examination and report by the Board of Engineers for Rivers and Harbors, and it was then recommended that the offer of the Alabama Power Co. be accepted.

The CHAIRMAN. That was before the World War in Europe started?

Gen. BEACH. That was in 1912 and 1913.

The CHAIRMAN. So that the company had had some existence before they began to get in closer relationship with our Government?

Gen. BEACH. Yes, sir.

The CHAIRMAN. I assumed from some of the questions that were asked this morning that perhaps this company was gotten up during the war particularly for the purpose of getting these contracts with the Government.

Gen. BEACH. No, sir; there was nothing of the kind in that respect. The company was a well-organized and going concern in northern Alabama at the time of the outbreak of the war. It had built its large dam, known as Dam No. 12, at the Coosa River before the war and was engaged in the distribution of power from that dam.

The CHAIRMAN. What did they offer to do? What offer did they make?

Gen. BEACH. In 1913?

The CHAIRMAN. Yes.

Gen. BEACH. I would have to get the record in that case. I do not have the reports here. It is all reported and published, and I am sorry I do not have a copy of that report with me, but I will obtain it.

The CHAIRMAN. What was the sense of the offer that they made? Were they to do the building or was the Government to do it?

Gen. BEACH. To the best of my recollection the Government was to do the building and lease the plant to them at a rate which would amortize the investment and pay a reasonable return to the United States for the use of the money. There was considerable discussion as to whether the term should be 50 years or 100 years, and it was finally decided that in the state of water-power development and the market, that the company would be badly handicapped by a shorter term, and 100 years was recommended.

The CHAIRMAN. Was the general water power act in effect at that time? When did you say this was?

Gen. BEACH. In 1912 and 1913.

The CHAIRMAN. Then, of course, there was no limit on the period of time as there is now?

Gen. BEACH. No, sir.

The CHAIRMAN. Is there anything further you would like to state with reference to the matter?

Gen. BEACH. There is only one thing and that is on the question of the limitation of time. It seems to me that it is not always advisable to apply one general rule. You do not always treat the large bodies the same as the small ones, because the conditions which are necessary to be imposed on a large body would unduly restrict a small organization in the transaction of business, and it is just a question of whether in as big and important a matter as this the 50-year rule would not work a hardship. The Secretary yesterday recommended the application of the 50-year rule on the ground that he did not desire to make an exception. At the same time it seems to me that

there are some other features which come into this case. For instance, this is not as yet a thickly settled portion of the country. It is not given over to manufactures, and it is a very different matter from what the installation of a power plant at Niagara Falls would be. There they have a large city, Buffalo, and cities all along the Great Lakes, Rochester and other large places contiguous, and it is a manufacturing section. Northern Alabama and Tennessee adjacent to Muscle Shoals are not manufacturing sections, and the length of time it would take to find a market for the power which can be developed there might be a very serious matter in the whole case, and it seems to me that the matter should receive careful consideration.

The CHAIRMAN. Then there is the matter of labor that would be required at the plant.

Gen. BEACH. Yes; and in many cases the power is used for operating municipal utilities. Birmingham and Memphis are the only two places anywhere near here. Nashville might be considered, but they are quite a long distance away, comparatively, and the marketing of the power and the development, if it is going to be done along ordinary commercial lines, would be, I think, slower here than at other places where no large water-power projects have been developed. I think it has taken at least 20 years to utilize all the water power, amounting to about 750,000 horsepower, that has been developed at Niagara Falls, in spite of its greater advantage of location.

The CHAIRMAN. How long a distance has it been proven positively that electric power can be carried?

Gen. BEACH. The Alabama Power Co., I know, are sending power at a voltage of about 110,000 volts to a distance of 250 miles.

The CHAIRMAN. Two hundred and fifty miles?

Gen. BEACH. Yes. There have been claims made by people engaged in electrical transmission of power that they are perfecting that work so that they can transmit power as economically, or will be able soon to transmit power, to a distance of 400 miles as economically as they do at present to a distance of 200 miles.

The CHAIRMAN. I think that it is claimed by the engineers of the water-power companies in California that they can transmit power 400 miles.

Gen. BEACH. But there is another feature of the case which has been developed as a result of the power survey during the war, which makes a great difference in that matter, and that was referred to yesterday in the Secretary of War's testimony when he spoke about relaying the power. I do not know whether the committee exactly understood it, but it might be put in this way. There might be a demand in New York greater than the power plants there could supply, using these cities as an illustration, Philadelphia could not supply any, neither could Baltimore, but Washington could. Now, then, they all say all along the line, if you will send forty or fifty thousand horsepower to Baltimore, Baltimore can send forty or fifty thousand horsepower on to Philadelphia, and Philadelphia can turn that much loose for New York, and by that means of tying together they are now sending power 600 miles.

The CHAIRMAN. Do you call that relaying power? Is that the technical term used?

Gen. BEACH. Yes, sir; that is one term that is used. As I say, they are actually sending the power in that way through different stations to a distance of 600 miles.

Mr. KEARNS. General, I do not understand that that is relaying power. Washington would send its power to Baltimore and Baltimore would use the Washington power and then Baltimore would send power to Philadelphia, and Philadelphia would use the Baltimore power and not the Washington power.

Gen. BEACH. Yes; they would use the Baltimore power.

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Mr. KEARNS. That would not be relaying the power.

Gen. BEACH. That is the term I have heard used. Mr. Martin is here and could tell about that. What term do you generally use?

Mr. MARTIN. That is the usual expression that we use in the business.

Gen. BEACH. Mr. Martin, who is the president of the Alabama Power Co., says that that is the term they generally use.

The CHAIRMAN. You may proceed, General.

Gen. BEACH. I was just going to say that those developments in transmission might provide a market at Muscle Shoals much earlier than would have been provided by the former method of simply supplying everything from the station where the power was actually generated, and it might be possible that the period of developing a market for the power at Muscle Shoals would for that very reason be shorter than would be the case under the former method; but there is not much in the immediate vicinity of Muscle Shoals to absorb this power. Things will have to be brought there; either

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some establishments created in order to utilize the power or you will have to send it out to other fields if you are going to utilize it at any time within the reasonable future after the completion of the dam.

The CHAIRMAN. You mentioned several cities that are along the coast and then you also mentioned Nashville, in Tennessee. Wilmington, I think was one of the cities you mentioned?

Gen. BEACH. No; I named Memphis, Birmingham, and Nashville as the only cities within reasonable distance or within such distance that they could receive their power by direct transmission. I probably might have included Chattanooga also.

The CHAIRMAN. How far are they from this place?

Gen. BEACH. They are all probably within a distance of 150 or 200 miles.

The CHAIRMAN. So that it would not be impossible to supply them with power if this plant were developed as it is proposed to develop it.

Gen. BEACH. But Birmingham is already fully supplied by the Alabama Power Co. from its power plants on the Coosa River. Chattanooga is also already provided with power from the power plant at Hale's Bar, about 8 miles below the town. That leaves only the two other cities.

The CHAIRMAN. Of course, it might develop some competition in the supplying of power.

Gen. BEACH. That would be a matter that would be under the public utilities commissions of the States.

The CHAIRMAN. At any rate it would supply an additional factor in supplying power to the various communities.

Gen. BEACH. Yes, sir. I told all the parties who came to consult with me with regard to making a proposition, that it was my idea that the United States did not desire to install this power plant for the purpose of being a disturbing element to vested interests; that, other things being equal, we would give preference to that proposal which fitted in best with existing conditions and did not destroy established business which had already been built up at considerable expense and time.

The CHAIRMAN. General, in the memorandum which you prepared for the Secretary of War and which is referred to as Exhibit E in his letter to the Speaker of the House of Representatives, you say that "the Engineer Department's estimate made in July, 1921, for completing Dam No. 2, with its full-power equipment is in round numbers, $28,000,000; and in August, 1921, for constructing Dam No. 3, $28,000,000." The estimate of Mr. Ford's engineers for completing Dam No. 2 in round numbers is $23,430,000 and for Dam No. 3, $19,000,000; in other words, the estimates of the engineers for the two dams is $56,000,000, while the estimates of Mr. Ford's engineers is a little over $42,000,000. How do you explain such a great disparity in the estimates?

Gen. BEACH. There is really very little difference in most cases between Mr. Ford's unit price and the unit price of the Engineer Department. If one were building a dam and had unusual good luck and was not called upon to provide for contingencies, it might be possible to get through with Mr. Ford's figures. Our figures are an estimate for an appropriation. We have to allow for contingencies, and when one is engaged in large construction in a big river like the Tennessee he has to provide a large appropriation for contingencies because of floods, or even ordinary freshets, or delays and interruptions to the work. You can easily see if we were caught in a big flood, our derricks thrown over, and our cofferdams washed out, we would have to spend a great deal to get back to where we were before.

The CHAIRMAN. I have seen that exemplified in California.

Gen. BEACH. I made the remark at one interview with Mr. Ford when I was present that I never in all my experience had seen a man engaged for the first time in river work that he did not make an underestimate. Mr. Ford smiled and said he could bear me witness to that effect; that he had started on one little improvement which he expected would cost from twelve to fifteen thousand dollars, and it had cost him over $100,000. But we felt we could not send an estimate here to Congress and then find, on account of large floods or serious interruptions to work, that we were running short of funds and then have to come back and ask for another appropriation. We have made our estimate at that figure at which we feel that we can, so far as human foresight can go, complete the work for the amount asked, and if we have good fortune and are not interrupted by great floods or have any disaster on the work we hope we can complete it at a sum well within our estimate and have something to return to the Treasury.

The CHAIRMAN. Later on, in this estimate which you made of $28,000,000 for each of the dams, you reported to the Secretary of War that by reason of prices after the war having come down considerably you thought you would be able to complete both dams for $50,000,000.

Gen. BEACH. There is another feature connected with the estimate for Dam No. 3. We have made no attempt at examination of the rock on which that dam will rest. Our information is to the effect that it is not as good rock as the rock at Dam No. 2

Mr. Ford has made more of an examination. I believe he had parties make an examination for him at Dam No. 3 which is more extensive than the examination we have made. But our information is not definite enough at that locality to allow us to submit an estimate for a better state of foundation than we believe we may encounter.

The CHAIRMAN. In this same memorandum you state that the indirect benefits accruing to the United States are the maintenance of a nitrate plant in readiness for war emergency. You put that first. Is that still your opinion in regard to the matter?

Gen. BEACH. My opinion, Mr. Chairman, is that preparedness is of the first importance, and that we ought not to be caught a second time as we were a short while ago.

The CHAIRMAN. So that the use of nitrates for explosives in case anything happens ought to be looked after primarily by the officials of the War Department before they take up the matter of fertilizer and things of that kind.

Gen. BEACH. I can not understand anybody who is acquainted with the conditions being willing to put the United States in such a position that in case of hostilities it would have to depend upon securing its nitrates from a foreign source of supply.

Mr. HULL. General, if you completed the dam, how long a time do you estimate it would take, that is, Dam No. 2?

Gen. BEACH. Mr. Hull, I have a saying which I try to live up to, that no man ever gets a date out of me, but in order to answer your question to the best of my ability I would say that if we are not unduly interrupted by floods or some big disaster of some kind, we ought to be able to get through with that work in two and a half or three years.

Mr. HULL. If you finish it, you ought to be able to finish it under the same conditions, of course, as Mr. Ford would finish it, approximately as cheaply as he would finish it; is that not true? I mean taking into consideration the character of the work that would go into the dam.

Gen. BEACH. As far as the cost of the materials is concerned, we probably could obtain them as reasonably as Mr. Ford. I think we could buy our cement, obtain our sand and gravel, and obtain the machinery at as reasonable a figure as he could. We are limited in our work to an 8-hour day. Mr. Ford, in all probability, would not be limited to an 8-hour day. And there are other restrictions which might interfere with our work. Under an Executive order we have to give our men a half holiday on every Saturday between the 15th of July and the 15th of September. That amounts to an appreciable item. Mr. Ford, on those two items, might be able to do the work at a somewhat less price than it would cost us.

Mr. HULL. Suppose the Government was to finish the proposition in the next two or three years. You know something about the power situation. Do you think it would be possible for the Government to sell the power to such an advantage that it would pay the interest on the investment, on the entire cost of Dam No. 2?

Gen. BEACH. I have very serious doubts as to our ability to dispose of that power immediately, if we completed the dam ourselves. I have no doubt as to our ability to develop a market for the power in course of time; but if Mr. Ford's offer is accepted, we have a market immediately developed. I understand, not from Mr. Ford himself, but from people who have talked with him in regard to the matter, that he intends to utilize this secondary power, which is a very large proportion of the product, in a way that we would have considerable difficulty in finding a customer for. In other words, I believe he proposes to install electrical furnaces. They would be used whenever the power is available, and he could utilize the secondary power in that way to great advantage, and do it immediately, whereas we would probably not be able for a good many years, if we were marketing the power ourselves, to find a customer who could use this secondary power, except for the purpose of relaying it, as I mentioned awhile ago.

Mr. HULL. Was it your branch of the Army that made the contract with the Alabama Power Co. as to the transmission line?

Gen. BEACH. We have had nothing to do with the Alabama Power Co., except to accept a deed from them for the land on which they acquired flowage rights.

Mr. HULL. You know nothing about this contract?

Gen. BEACH. Nothing that I would like to express an opinion upon.

Mr. HULL. You expressed an opinion here in regard to the limit of time. You have already made a contract, as I understand it, a minor contract, perhaps, for a hundred years, down there. Is that not so? I understood you had made such a contract.

Gen. BEACH. No, sir.

Mr. HULL. Was there not one contemplated?

Gen. BEACH. Not by my department.

Mr. HULL. If I understood you correctly, you think that there might be something in the contention that in a proposition of this kind it would not be unreasonable to give them a hundred-year lease?

Gen. BEACH. I expressed the opinion that there were conditions at this locality regarding the state of development, the character of development of the surrounding

country, and the amount of power involved which would make the development of the market for this power under ordinary circumstances slower than it would be in other places, and that I did not think, on account of those conditions, that you should necessarily apply the same rule simply because you had the rule.

Mr. HULL. You have read the offers of Mr. Ford, both the first offer and the second offer in modified form. Do you care to express any opinion for the information of the committee as to what you think we should do?

Gen. BEACH. That is practically the same question, is it not, which the Secretary hesitated so long yesterday in answering, and the member of the committee who asked it offered to withdraw it if the Secretary did not want to answer it?

Mr. HULL. That is the same question.

Gen. BEACH. I would say this, that there is one feature of the case connected with an award to Mr. Ford that appears to be worthy of consideration, and that is this: The Tennessee River possesses an immense potentiality with regard to water-power development. I believe there is no stream in the country, considering the amount of water which is carried and the steepness of its slope, which will furnish the amount of water power that the Tennessee River has, except perhaps the St. Lawrence River. At Muscle Shoals we count on about 100,000 primary horsepower and about 440,000 or 450,000 secondary horsepower.

Mr. HULL. That is at Dam No. 2?

Gen. BEACH. Yes; but every dam that is built on the upper Tennessee which will restrain the flood waters and let them out gradually during the low-water season will increase the primary power at Dam No. 2, with a corresponding decrease in the secondary power. Mr. Ford has said that if he obtained the lease of this property at Dam No. 2, or the lease of the property according to his proposition, he intends to come in and make application for other dams on the upper river and develop them up there above with the idea of utilizing the power which he can obtain from them and increasing the value of the power which he has made arrangements to obtain by his offer at Dam No. 2. That one feature of the case alone appears to me to be worthy of the most careful consideration by Congress, for I believe that the leasing of Dam No. 2 to Mr. Ford will be followed by a development along the Tennessee River which would be very material, and would probably amount in a few years to more than you would get in any other way in the course of a generation or two.

Mr. HULL. That is a very comprehensive answer, and I think it is what the country wants to know. Have you any opinion to express in regard to the effect upon the river navigation in the development of the two dams?

Gen. BEACH. The navigation of the Tennessee I regard as of great importance—that is, the development of navigation. The Tennessee River is one of the richest rivers in the country in regard to mineral deposits along its banks. They have immense coal fields in eastern Tennessee, and in the upper reaches of the Tennessee River, which have not been touched. They have some coal beds up there, I understand, which are 30 feet thick in solid coal, and any development which would permit that coal to reach the market economically would be, I consider, of national importance. The Tennessee River is not subject to the same floods that the Ohio is subject to, and yet it carries practically the same amount of water throughout the year that the Ohio does above the junction of the two streams. The reason for that is that the upper waters of the Tennessee lie in a region where they receive the rainfall of storms that come from Arkansas and Texas, moving northeast, and they also feel the effect of rainstorms that come up the coast and do not extend west of the Appalachian system. The consequence is that the Tennessee carries a larger volume of water than almost any other stream in the United States in proportion to the area of its watershed.

Mr. HULL. You have given us a very comprehensive answer to that question. There is another question I would like to ask you. You have some development down there in what is known as a stand-by condition. Your whole organization, as I understand it, is decimated and gone, and you would have to reorganize, which would take you some time. Have you any opinion as to what that would cost the Government?

Gen. BEACH. Yes, sir.

Mr. HULL. Will you give us that?

Gen. BEACH. It is close to $20,000 a month, so far.

Mr. HULL. That continues as long as it stands there; is that true?

Gen. BEACH. And we have any money to meet the pay roll.

Mr. HULL. In other words, we ought shortly to do something with it.

Gen. BEACH. Yes, sir; because you are spending that amount of money, practically $200,000 a year, without one cent's benefit from it.

Mr. KEARNS. General, most of your testimony has been along the line of developing water power for commercial purposes, and very little has been said about the manufacture of nitrate for the purpose of making fertilizer. What is Mr. Ford's idea as to developing water power and manufacturing nitrate for fertilizer?

Gen. BEACH. It is very hard to tell what another man's idea is if he has not talked himself, and all that I have to go on, in reply to your question, is the remarks that have been made to me by Mr. Ford, not directly on this point, and those which have been repeated to me by people with whom he has conversed on the subject. I know that Mr. Ford has the idea that he would like to stand in the same relation to the farmer and to agricultural pursuits that John D. Rockefeller stands in to-day in regard to the eradication of disease and the promotion of medical science. He has said that he hoped to be able to get the production of his machines to such a price that the farmers can buy a Ford automobile, a Ford tractor, and a Ford truck, all for $1,000. And I have every reason to believe that he aspires to go down in history as the man who has done the most to develop the agricultural resources of his country and the agricultural possibilities of the world.

Mr. KEARNS. In his talk with you has he discussed the building of other dams by means of which he might produce greater horsepower?

Gen. BEACH. That has been mentioned, not with me, but with other parties who have reported the conversation.

Mr. KEARNS. Do you know how many tons of nitrate are used in the manufacture of fertilizer throughout the United States to-day?

Gen. BEACH. No, sir, I do not.

Mr. KEARNS. Can you get that information?

Gen. BEACH. Yes, sir. I understand that representatives of the American Farm Bureau Federation have requested to be heard by this committee. They can give you more definite and direct information on that subject in five minutes than I can in an entire afternoon.

Mr. KEARNS. Has your department those figures?

Gen. BEACH. No, sir.

Mr. KEARNS. Do you know how many tons of nitrate could be manufactured at Muscle Shoals, provided Mr. Ford were to get the plant and operate it at its full capacity?

Gen. BEACH. No, sir, I have no information on that. That is entirely outside of my province.

Mr. KEARNS. Can you get it?

Gen. BEACH. I can get it for you very readily, sir.

Mr. KEARNS. Has not some bureau of the War Department those figures?

Gen. BEACH. The Ordnance Department, whom you have just heard, has more information on that point, or should have it, than any other branch of the Army.

Mr. KEARNS. I would like to get it from that department if I could. Can you get it from them?

Gen. BEACH. I would prefer, if there are no objections, and I am to bring that information to you, to go where I think I can get it most reliably and accurately.

Mr. KEARNS. Has not the Ordnance Department these figures, and will those figures not be reliable?

Gen. BEACH. I would not like to say they would not be reliable, because they ought to be, and if they have not got those figures themselves they ought to go to the best place to get the information.

Mr. KEARNS. I would like to get the information from as many different sources as possible in order to show how nearly they correspond, and whether any reliability can be placed in any of the figures.

Gen. BEACH. I will be very glad to do that, and if I can get information I will do this: I will try to obtain it from different sources, and if I find they do not agree I will try to reconcile them for you.

Mr. KEARNS. If they do not agree, why can you not put the different answers in the record and show the disagreement?

Gen. BEACH. That is what I mean. I only meant I would try to see whether the different estimates had any explanation, just as in the case of Mr. Ford's figures for completing the dams and mine, which although they are quite different, yet as soon as the reasons for those different figures are given the discrepancy is perfectly intelligible to any man.

Accurate figures upon fertilizer production are difficult to obtain; those noted in the table following have been derived from the following sources: The American Fertilizer Handbook for 1921; Bulletin No. 798, United States Department of Agriculture, The Survey of the Fertilizer Industry; Census Bureau's Advance Summary Concerning the Fertilizer Industry, May 18, 1921; Senate Document No. 551, Sixty-fourth Congress, first session, Report on the Fertilizer Industry by the Federal Trade Commission. The following is quoted from the American Fertilizer Handbook with regard to its statistics: "Following is a list of States showing the consumption of fertilizers for the fiscal years ending in 1913, 1914, 1915, 1916, 1917, 1918, 1919, and 1920, compiled from the most reliable statistics that are obtainable. In some of the States there are absolutely no accurate figures available; in these States estimates have been made

based on information obtained from State officials and fertilizer manufacturers." Bulletin No. 798, Department of Agriculture, contains figures prepared by the assistant to the secretary in charge of fertilizer control for 1917 and 1918, during which years the fertilizer industry was under Government supervision, and figures should be quite reliable. The Census Bureau report gives figures for 1914 and 1919; in this case, however, there is apparently some duplication, which makes the totals appear greater than they might be expected to be. The report of the Federal Trade Commission quotes figures from the American Fertilizer Handbook for 1915, hence they are not reproduced.

There are apparent discrepancies between the figures of the Department of Agriculture and the Fertilizer Handbook for 1917 and 1918. It must be remembered, however, that fertilizer is sold in two important forms, namely, mixed fertilizer and acid phosphates. A certain amount of the acid phosphates, sold as such, is bought by the manufacturers of mixed fertilizer for use in their product. It is evident that we must subtract from the acid phosphate, sold as such, the amount used in mixed fertilizer in computing the total fertilizer production. If this is done, figures of the Department of Agriculture tally closely with those of the American Fertilizer Handbook. If similar precuations are taken it is possible to make the Census Bureau figures also tally with reasonable closeness with those of the American Fertilizer Handbook. It should here be noted that the latter's figures are for consumption and not production.

The percentage of nitrogen in mixed fertilizer is a variable quantity. Computations based on the statistics of the Department of Agriculture would indicate that in 1917 the percentage of nitrogen in mixed fertilizer was 3.4, whereas the same source would show that in 1918 the percentage was only 2.5. Best available sources, though uncertain, indicate that this percentage varies on the average between 2.5 and 3.5. Again using the figures of the Department of Agriculture and assuming the production of nitrate plant No. 2 at Muscle Shoals as 110,000 tons of ammonium nitrate per annum, the tables show that this plant at that capacity would produce for those years from 25 to 30 per cent of the total nitrogen used in mixed fertilizer.

The foregoing discussion does not take account of organic fertilizer such as fish scraps, dried blood, cottonseed meal, etc., as these products form only a small and uncertain proportion of the total fertilizer produced. The foregoing considerations also seem to show that the figures of the American Fertilizer Handbook are in the main reasonably accurate as regards total fertilizer consumption.

Fertilizer production.

[All figures in tons (2,000 pounds) unless otherwise noted.]

	1914	1915	1916	1917	1918	1919	1920
Total production (all kinds):[1]							
American Fertilizer Handbook	7,340,528	5,563,212	5,390,549	6,206,543	6,756,743	6,891,322	7,654,239
Census Bureau	8,432,000					8,291,000	
Mixed fertilizer:							
Census Bureau	5,612,000					4,696,000	
Department of Agriculture				4,442,528	4,957,799		
Acid phosphate (sold as such):[2]							
Census Bureau	1,761,000					2,457,000	
Department of Agriculture				2,097,625	2,025,116		
Acid phosphate (used by mixed fertilizer manufacturers), Department of Agriculture				494,261			
Other fertilizers, Census Bureau	1,059,000					1,138,000	
Total ammonia in mixed ferilizer, Department of Agriculture				186,000	150,000		

	Per cent.	Per cent.
Ammonia in mixed fertilizer	4.2	3.0
Nitrogen in mixed fertilizer	3.4	2.5
Total nitrogen supplied by nitrate plant[3]	25	31

[1] Federal Trade Commission's report in 1916 states that 80 per cent of all fertilizer produced is in the form of mixed fertilizer. (P. XVI.)

[2] There is no nitrogen in acid phosphate.

[3] Based on 110,000 tons of ammonium nitrate, or 38,500 tons of nitrogen, the estimated annual production of nitrate plant No. 2, at Muscle Shoals.

FERTILIZER TONNAGE BY STATES.

Following is the list of States, showing the consumption of fertilizers for the fiscal years ending in 1913, 1914, 1915, 1916, 1917, 1918, 1919, and 1920, compiled from the most reliable statistics that are obtainable. In some of the States there are absolutely no accurate figures available. For these States indicated by an asterisk, estimates have been made, based on information obtained from State officials and fertilizer manufacturers.

State.	Fiscal year ending—	1913	1914	1915	1916	1917	1918	1919	1920
		Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons*	*Tons.*	*Tons.*
Alabama	Oct. 1	474,730	592,200	302,350	206,000	210,000	289,900	297,903	388,341
*Arizona	June 30	600	650	650	600	500	500	500	500
Arkansas	Sept. 30.	52,000	84,850	26,396	65,600	58,500	88,500	64,427	81,875
California	June 30	36,000	39,471	31,540	29,415	43,964	32,036	43,126	58,636
*Colorado	Dec. 31	500	500	600	1,000	1,000	1,000	1,000	1,000
*Connecticut	do	62,000	74,000	80,000	73,000	78,000	80,000	65,000	65,000
*Delaware	do	50,000	55,000	45,000	45,000	50,000	54,000	30,398	61,537
Florida	do	213,728	240,812	208,782	212,250	214,088	197,954	250,613	272,316
Georgia	do	1,120,693	1,282,088	872,979	741,347	895,897	923,020	990,919	978,090
*Idaho	July 1	200	500	500	500	500	500	500	500
*Illinois	Apr. 30	30,000	40,000	35,000	42,000	45,000	45,000	45,000	45,000
Indiana	Dec. 31	193,899	219,000	156,152	132,159	156,000	244,340	241,000	230,184
*Iowa	Apr. 30	3,500	4,200	5,100	5,000	5,000	5,000	5,000	5,000
Kansas	Dec. 31	7,380	9,460	10,060	7,940	7,600	8,000	16,937	12,650
*Kentucky	do	75,000	83,000	85,000	62,000	93,000	128,000	103,000	90,000
Louisiana	Aug. 31	98,778	90,588	73,420	96,426	98,264	81,025	97,724	95,864
*Maine	Dec. 31	160,000	168,000	150,000	155,000	160,923	155,000	156,000	168,000
Maryland	do	169,000	183,350	168,000	154,000	191,900	173,000	174,500	173,000
*Massachusetts	June 30	51,000	54,000	56,000	53,000	64,000	68,000	61,000	61,450
*Michigan	Dec. 31	57,985	60,000	65,000	70,000	91,455	78,000	103,264	112,616
*Minnesota	do	3,500	3,800	4,000	4,500	4,500	5,000	5,000	5,000
Mississippi	Oct. 1	128,050	127,400	85,414	75,667	76,717	104,700	110,000	139,000
*Missouri	Dec. 31	60,000	65,000	57,000	41,000	65,000	90,000	91,000	120,332
*Montana	No law	800	900	1,000	1,000	1,000	1,000	1,000	1,000
*Nebraska	do	500	500	500	500	500	500	500	500
*Nevada	do	800	950	1,000	1,000	1,000	1,000	1,000	1,000
*New Hampshire	Apr. 30	18,000	20,000	16,000	18,000	20,000	18,000	14,000	17,000
New Jersey	Oct. 31	156,661	155,414	153,075	129,800	176,483	153,198	149,485	164,820
*New Mexico	No law	200	200	500	500	500	500	1,500	1,500
*New York	Dec. 31	380,000	420,000	400,000	400,000	420,000	430,000	410,000	400,000
North Carolina	Dec. 1	840,447	872,820	647,188	650,000	849,728	921,962	961,238	1,221,796
*North Dakota	Dec. 31	500	550	600	700	1,000	1,000	1,000	1,000
Ohio	do	183,476	203,000	225,000	187,848	165,857	219,328	305,236	300,000
*Oklahoma	June 30	2,000	2,000	2,000	3,000	3,000	3,000	4,000	4,000
*Oregon	Aug. 30	4,500	6,300	6,500	6,500	7,000	6,000	7,500	5,500
Pennsylvania	Dec. 31	340,000	381,900	316,319	268,455	334,309	340,898	340,000	326,864
*Porto Rico	June 30	18,836	18,164	20,000	37,725	45,767	40,811	21,815	20,000
*Rhode Island	Mar. 31	9,000	12,500	11,000	12,000	11,500	10,000	9,000	10,000
South Carolina	June 30	918,336	1,095,728	670,610	833,624	850,790	1,064,886	1,033,887	1,253,890
*South Dakota	July 1	700	1,000	1,500	1,500	2,500	2,500	3,000	3,000
Tennessee	May 31	84,060	93,550	77,390	91,128	99,584	113,000	109,366	112,202
Texas	Sept. 1	75,500	77,400	17,500	39,845	40,500	58,000	46,000	56,700
*Utah	Dec. 31	1,000	1,200	1,500	1,000	1,000	1,000	1,000	1,000
*Vermont	June 30	14,500	18,000	13,500	15,000	14,500	16,000	18,000	20,000
Virginia	Dec. 31	412,434	437,808	406,077	369,520	496,217	430,549	421,484	429,024
*Washington	Mar. 31	1,500	2,400	3,000	3,000	4,000	4,010	4,000	4,000
West Virginia	June 30	31,852	35,475	46,010	40,000	41,000	59,036	63,000	121,052
*Wisconsin	Dec. 31	4,000	4,500	5,000	5,000	6,500	7,500	10,000	12,000
Wyoming	No law	200	400	500	500	500	500	500	500
Total		6,544,345	7,340,528	5,563,212	5,390,549	6,206,543	6,756,743	6,891,322	7,654,239
Hawaii	June 30	67,000	80,000	70,000	65,000	80,000	64,000	71,000	70,000

Mr. PARKER. General, under this contract or proposition of Mr. Ford, he agree to complete the construction work at the two dams and install the power, etc., for the United States at actual cost, and without profit to the company. That makes him a contractor with the United States. Would he not therefore be bound by the rules as to the 8-hour day, Saturday half holidays, etc.?

Gen. BEACH. That is quite questionable. If we were to simply make a contract to complete that dam, take over the construction of the dam and complete it without the usual form of contract specifying that he must adhere to the 8-hour law, I would say myself that the 8-hour law would not apply.

Mr. PARKER. This is a contract with the United States to complete a dam and to do certain work at actual cost. In carrying out the details and making a contract, under the statutes should not that be put into the contract?

Gen. BEACH. That is questionable. At any rate, he is not bound by the Saturday half-holiday provision. He would have that advantage. It has been held in a number of cases that even where the 8-hour law applies, it does not apply to subcontractors, and it seems to me it would depend on the manner in which that contract was made, as to whether the 8-hour law was a necessary part of the contract or not.

Mr. PARKER. I only brought it up because you said it would apply to him: I was a little doubtful about it and you are a little doubtful about it.

Gen. BEACH. Yes.

Mr. HILL. General, I understood you to say the United States at the present time was expending about $20,000 a month at Muscle Shoals. Does that take into consideration the amount of rental received from the Alabama Power Co.?

Gen. BEACH. We are not receiving any rent from the Alabama Power Co. Those properties which have been leased to the Alabama Power Co. belong to the Ordnance Department and not to the Engineer Department.

Mr. HILL. Then I would like to try to get those two things coordinated. You say the Engineer Department is spending about $200,000 a year down there at the present time.

Gen. BEACH. Yes.

Mr. HILL. Do you know how much the Ordnance Department is receiving in rentals?

Gen. BEACH. They stated that they had made the lease at the rate of $10,000 a month, or $120,000 a year, plus certain other features, which varied with the amount of power supplied, I believe.

Mr. HILL. I was not clear from the Secretary's statement yesterday as to whether Muscle Shoals at present is costing the Government anything ultimately or not. I understood the Secretary to say that the income from leases at the present time was such that Muscle Shoals was not costing the Government anything.

Gen. BEACH. I understood the Secretary's reply to refer to the nitrate plants and not to the dams.

Mr. HILL. I would like to ask that question as to the whole proposition. Can you give us that? We will be asked that question undoubtedly on the floor as to what the stand-by situation is at the present time.

Gen. BEACH. I will very gladly do that.

Mr. WURZBACH. General, quite a thorough examination and survey was made during the year 1915 by the Engineer Department with reference to the foundations at both these dams, No. 2 and No. 3, was there not?

Gen. BEACH. We have had no survey made at No. 3 of such character that I would like to be held responsible for the detailed plans and the foundations. We would have to make further examinations at No. 3.

Mr. WURZBACH. Maj. Burgess, I think, made a report on that, did he not?

Gen. BEACH. At No. 2.

Mr. WURZBACH. Did that not include No. 3?

Gen. BEACH. No, sir; No. 3 was only referred to incidentally.

Mr. FROTHINGHAM. I would like to ask you, General, where the Tennessee River rises. Does it rise in West Virginia, or eastern Tennessee?

Gen. BEACH. The Tennessee River rises in Virginia, and North Carolina.

Mr. FROTHINGHAM. Virginia, or West Virginia?

Gen. BEACH. Part of it goes up into West Virginia, as well as Virginia. I think there are some small branches there, but the West Virginia portion is so small as to be practically negligible.

Mr. FIELDS. General, what is the annual cost of the Muscle Shoals Canal?

Gen. BEACH. The probable annual cost of the present Muscle Shoals Canal would run in the neighborhood of between $30,000 and $40,000.

With regard to the question in reference to the condition of Dam No. 2, I would like to show the committee some pictures that illustrate the present progress of the work. I would state as you see by this map, which is right here in front of you, which most of you have examined, the river is divided at this point by an island, and the total length of the dam is about 4,800 feet, nearly a mile long. We have pushed the concrete work on the island a little faster than at other points, because we could work in the dry at that point, and we wanted to leave as much as possible of the waterway for the river. Consequently, the greatest height of the dam, as shown by these pictures, is on the island. This one, which I suggest be kept separate [indicating photograph], is a view from the south bank, looking north, showing the entire work, with our construction camp on the other bank, and this one with the little house down in front [indicating photograph] is a view from the north bank looking toward the south. They will give you a better idea of the construction than you can get from my description of it.

Mr. FIELDS. At the suggestion of Judge Parker, I will ask you at this point how much the water is raised there by the dam?

Gen. BEACH. We have not raised the water any as yet.

Mr. FIELDS. How much will it be when it is completed?

Gen. BEACH. One hundred feet.

Mr. FIELDS. What did you say the annual cost of the Muscle Shoals canal is?

Gen. BEACH. Between $30,000 and $40,000. That varies, depending on how many locks have to have new gates, and other matters of that kind.

Mr. FIELDS. The use of that canal would cease with the construction of the dams Nos. 2 and 3, would it not?

Gen. BEACH. That would be entirely drowned.

Mr. FIELDS. The Government would be saved that amount of expense for all time to come; that is, as far as the operation of the canal is concerned.

Gen. BEACH. Yes. The cost has varied between $35,000, which I think is about as small as we have ever had, up to $85,000, but it will probably average between $40,000 and $50,000.

Mr. FIELDS. Mr. Ford offers to pay the Government $35,000 and $20,000, respectively, for the maintenance of Dams 2 and 3, and the operation of the gates and locks. The Secretary of War suggests to Congress the advisability of letting Mr. Ford do that work himself and relieve him of paying this amount. Is it not a fact, General, that the operation of the locks pertains strictly to navigation?

Gen. BEACH. I did not understand the Secretary's proposition to relate to the locks at all; it was simply relating to the maintenance of the dams and the controlling gates on the dams.

Mr. FIELDS. I may have misread it. He proposes to elieve the Government of the expense of operating these locks and gates. I was going to ask the question, if the operation of the gates was not strictly a governmental function?

Gen. BEACH. Oh, yes; we could not allow anybody else to operate the locks or the lock gates for us. The dam is provided with controlling gates across the entire length of the dam, which will regulate the height of the water in time of flood, and those are the gates which Mr. Ford must necessarily operate if he operates the power house. The operation of those gates is necessary in connection with the operation of the power house.

Mr. FIELDS. The government could not delegate to him any function which is connected with navigation.

Gen. BEACH. It could not, and would not.

Mr. FIELDS. I misconstrued the Secretary's letter to that extent. The Secretary also suggests on page 10 the operation of plant No. 2 as a power proposition and the sale of its product. I will ask you to place in the record at this point, General, an analysis showing the cost of the operation of power plant No. 2 by the government for a term of six years, and what its income would be from such operation. I would like to see where we would be on a propos.tion of that kind.

Gen. BEACH. You want the cost of operation of the power plant itself and the dam for the first six years?

Mr. FIELDS. Yes, and the proceeds, or the value of its income. I would like to have a statement showing the interest on the investment for the time Mr. Ford is building these dams. It might be well to state the interest on this proposition too.

Gen. BEACH. I will be glad to do that.

Mr. FIELDS. How many concerns are operating under franchises from the Government in navigable streams for a period of 99 years, or an indefinite period?

Gen. BEACH. I do not recall any offhand that are operating on a 99-year basis. There are some power plants in navigable streams without any limitation, the most noted one being the dam across the Mississippi River at Keokuk, Iowa.

Mr. FIELDS. It was an indefinite lease?

Gen. BEACH. There is no term to the permit which was granted that company.

Mr. FIELD. What is the term of the one across the Tennessee River at Chattanooga River?

Gen. BEACH. At Hales Bar?

Mr. FIELDS. Yes.

Gen. BEACH. That has no term.

Mr. FIELDS. And the permit of the Alabama Power Co. at Lock 12 is indefinite?

Gen. BEACH. That is indefinite. That portion of the Coosa River is not navigable and will not be navigable until a large number of dams are built.

Mr. FIELDS. Under the recent power act, what has been the progress of the development under the 50-year lease plan? Have they been able to finance projects, in your opinion?

Gen. BEACH. You must remember, Mr. Fields, that that is not my province and I only have such information as comes to me incidentally.

Mr. FIELDS. I know, but by reason of your position you would get probably much more information than the balance of us would get, and if you have no objection to answering the question I should be very glad to have your opinion. But if you prefer not to answer it I shall not press it.

Gen. BEACH. I would not like to make a statement in regard to the matter because I do not feel that the information which has come to me was presented to me in the same manner and with the same care that a person would make that statement if he knew I were going to quote it and the statement be spread throughout the country. In other words, we find in holding hearings with regard to river and harbor matters, that it is of the greatest impotance to have those statements made in writing if we can get the parties to do so, because they will make statements, they will be carried away with enthusiasm, or if they believe their statements would affect the parties to whom they are presenting them they will make them a little bit stronger.

Mr. FIELDS. A little more reckless.

Gen. BEACH. A little more reckless, and because of that they would not feel that it is fair to those parties to quote them, nor would I like to be in a position of stating those opinions made to me in that way.

(Thereupon the committee adjourned at 3.55 o'clock to meet to-morrow, Friday, February 10, 1922, at 10.30 o'clock a. m.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Friday, February 10, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. Gen. Beach, when we adjourned last night, Mr. Fields was asking you some questions, and we will continue from that point.

STATEMENT OF MAJ. GEN. LANSING H. BEACH, CHIEF OF ENGINEERS, WAR DEPARTMENT—Resumed.

Mr. FIELDS. General, when we adjourned yesterday we were discussing operations under leases of 99 years, or for indefinite periods. Has there been any development of facts in the operation of any of these long franchises that you know of that would now seem to make a franchise of that kind undesirable, that is, the long franchise?

Gen. BEACH. The only power dams that are located in navigable rivers at the present time were built before the national water power act was passed, and they have no limit whatever. They are simply there with rights in perpetuity, and Congress when it passed the water power act, took the position that the use of the water power was likely to become so valuable that the conditions might change very materially, and the privilege which was given these parties might become so valuable that they thought a readjustment at the end of a definite period would be advisable, and they put that period at 50 years. Now, that was the view of Congress, and the point that I made yesterday was that while that might be very advisable in the ordinary case, such as minor streams, for instance, like the Coosa or the Allegheny, or rivers of that kind, yet in the case of Muscle Shoals, with as large a river as the Tennessee, and considering conditions of business in that vicinity, it would be advisable, I think, to consider the circumstances very carefully and see whether they were not such as to justify an exception to the rule.

Mr. FIELDS. In other words, you do in a way, at least, measure the tenure of the franchise by the magnitude of the proposition?

Gen. BEACH. Not entirely. I would take all conditions into consideration. I tried to invite attention yesterday to the fact that there was no immediate sign of a market at this locality. There are only four towns within the ordinary reach of direct electric distribution from Muscle Shoals—Chattanooga, Birmingham, Nashville, and Memphis. Birmingham already is supplied with electrical power by the Alabama Power Co.; Chattanooga is supplied with power from Hales Bar, a dam on the Tennessee River 8 miles below that city. Nashville, I find, is also supplied by power from a dam on one of the small streams in the State of Tennessee, and that leaves Memphis alone as the only likely immediate market for all the electric power at Muscle Shoals, and the situation seems to be very similar to a man's establishing a large department store. If a man has a capital of $10,000, and that is all he can raise, he can find a market for his goods in almost any small town. But if he is going to establish a store with a million dollars capital, he has to go where he can sell his goods, or he has to have time to work up a trade which would justify that expenditure.

Mr. FIELDS. And it will require a longer time to work up that kind of trade than with the $10,000 stock?

Gen. BEACH. Exactly; and that is the point to which I am inviting attention. You are establishing a million dollar store, so to speak, here in this community, where the population and the business interests are not yet sufficient to support it. I just want to invite attention to the fact that the consumption of electricity is something that I do not believe is generally understood. People see electric

lights burning, street cars running, and they think that a large quantity of electricity is being used. Now, I understand that the entire electric lighting of the whole State of Alabama does not require more than about 25,000 horsepower. If you go into Chattanooga you will see a little building, not much more than a shed, not much larger than a three-automobile garage, standing beside the railroad track. That little building uses more electric power than all of the rest of the city of Chattanooga put together, because it has some electric furnaces in there for use in making electroferrosilicon, and those electric furnaces alone use more than all the other industries, the lighting and the running of the street cars in Chattanooga.

Mr. FIELDS. You spoke of Memphis being the only possible market at this time. It is probable, is it not, that the plants at Memphis are equipped for the production of additional industries that would require additional electric power?

Gen. BEACH. I have been told, but I do not know whether the information is authentic or not, that Memphis could probably not absorb more than 50,000 horsepower in all particulars, if the dam were built.

Mr. FIELDS. Then, aside from that, a market must be found by the lessee, whoever takes this proposition, for the entire consumption of power?

Gen. BEACH. Yes, sir; the entire use of power.

Mr. FIELDS. That is what I mean. The Alabama Power Co. could not use it, apparently, from their statement, could they?

Gen. BEACH. They have said so, in connection with the installation of the new unit which they are putting in at Duncans Riffle, on the Coosa River.

Mr. FIELDS. They are putting in a new plant there now?

Gen. BEACH. They have received a permit for that recently, and work has just started, and they said that with the installation of that plant they would be more than supplied with power for the immediate future.

Mr. FIELDS. For the benefit of the committee will you put that statement of theirs in the record?

Gen. BEACH. I have just made it.

Mr. FIELDS. You have covered what they said in your statement?

Gen. BEACH. Yes, sir; but I have a copy of their letter, and I will read you what they said on that point. This is a letter addressed to me, dated July 14, 1921, in which they say:

"Since that letter was forwarded to you (referring to their former letter) the Federal Power Commission has issued to this company a license to construct the Coosa development. We are planning to install 60,000 horsepower, and preliminary construction is now beginning. It is our purpose to prosecute the work with all diligence, with the view of having power available therefrom in the spring of 1923. While the initial installation as now planned is 60,000 horsepower, the ultimate installation will be 120,000 horsepower. In going forward with this development we considered that we were in duty bound to proceed, because it did not seem at all possible that the Muscle Shoals hydro development could produce any power during 1923 or 1924. Our power demands are at present in excess of our waterpower capacity, but the power which will result from the new Coosa development will fulfill our immediate requirements—that is, will enable us in 1923 to greatly reduce our steam running—and we will thus be enabled to meet the public demands during 1923 and for the most part of 1924 with the output of our hydro plants.

"However, we wish to say that study of the power markets in the territory served by our company convinces us that the demands for power will require further sources, which should be available during 1925 at the latest.

"We must make our plans for several years in advance of actual power needs, and longer notice than one year in advance of actual date at which the Muscle Shoals power could be delivered would be necessary for this company to commit itself for the taking of definite amounts of power; and unless a commitment can be made not later than March, 1922, by the United States Government, for the delivery of definite amounts of power we will find it necessary to proceed with another hydro development in Alabama to meet our requirements. We will be glad, meanwhile, to discuss the subject with you in a definite way if desired."

Mr. FIELDS. Did not the Alabama Power Co. plant supplement the secondary power at Muscle Shoals, the power from storage reservoirs on the Coosa and Tallapoosa Rivers, when they made their offer of 1913?

Gen. BEACH. It is my understanding that they did.

Mr. FIELDS. And that dam was in the interest of navigation, was it not?

Gen. BEACH. It could be made so. But their dams do not contemplate the installation of locks, and unless the pools formed by the different dams reached from one to the other, they could not produce a through navigation at all. They would, of course, create the possibility for navigation in the pool formed by each dam, if that dam were provided with a lock for the passage of boats.

Mr. FIELDS. It is possible, but not probable, under that arrangement that it would furnish navigation?

Gen. BEACH. There is the possibility.

Mr. FIELDS. What part of the flowage of Dams Nos. 2 and 3 would properly be chargeable to navigation?

Gen. BEACH. That is one of those questions which can be answered quite differently according to the basis you take for the calculation.

Mr. FIELDS. Then I would take this basis: If you are preparing for a project for navigation alone, you would have so much flowage. If you are preparing for navigation and hydroelectric power, you would have additional flowage, and I would find a difference between the flowage for necessary navigation alone and the total.

Gen. BEACH. If we were going to provide locks and dams on the Tennessee for navigation purposes only over the section of the river we are considering at Muscle Shoals, the cost would be about $8,000,000. If you take the cost of the works applicable to navigation in the locks at Nos. 2 and 3, you get a cost of about $4,500,000 for navigation.

Mr. FIELDS. I notice that the Secretary of War said that Mr. Ford should pay interest on all flowage charges on Dam No. 3. Has anybody in the United States ever made a proposition to pay interest to the United States on the part of the project that is chargeable to navigation?

Gen. BEACH. I do not recall any such proposition. I would state with regard to the wording of Mr. Ford's proposition with regard to the flowage damages at No. 3, that I do not understand his statement in the way that it has been apparently understood by parties who have spoken before this committee.

Mr. FIELDS. I understand there is some difference of opinion on that.

Gen. BEACH. In other words, the interpretation which I have placed on that is this: I understood Mr. Ford to state that he would not procure those rights, leaving it to the Government to procure them by its right of eminent domain. But he does not say that the cost was not included in the cost of construction, and I did not understand his statement to mean that the United States must assume all the cost of the flowage rights, but that it merely meant that the United States must acquire them, and did not prevent the United States from including that amount in the costs of the work.

Now, I would like to just invite attention to one feature of the question of land condemnation. If the Government, or a very wealthy party like Henry Ford, desires land, it immediately goes up tremendously in value, and it seems to me that it would be only a good business move on Mr. Ford's part to place the acquisition of that land upon the Government under the right of eminent domain; and I did not understand, and I do not yet understand, that his proposition means that he is opposed to that being included in the cost of the work.

Mr. FIELDS. I agree with you on that, from my reading of the proposition; and yet I know there is a difference of opinion, and I was trying to bring out some facts for our guidance in the future. In that connection, the maintenance of a reservoir up there is a very necessary appurtenance to the production of hydroelectric power, is it not? A pool must be maintained, and therefore it becomes a part of the project.

Gen. BEACH. Oh, yes. You can not obtain a uniform and a definite supply without a pool of considerable magnitude, or a reservoir of sufficient area to furnish a uniform supply during the lower stages of the stream.

Mr. FIELDS. And the maintenance of the pool naturally requires flowage rights, and therefore you would connect flowage rights with the production of the power.

Gen BEACH. As Napoleon said, "You can not make an omelet without breaking eggs," and you can not make a pool without overflowing.

Mr. FIELDS. I notice in House Document No. 20, of the Rivers and Harbors Committee, that the Board of Engineers on May 18, 1914, said that the amount of approximately $8,575,000 is the value of the proposed improvement at Muscle Shoals that would be chargeable to navigation, and the remainder would be chargeable to power development. Would that statement be true to-day? In your opinion, would the condition that prevailed then, or the estimate made at

that time be a proper estimate at this time of the amount which would be chargeable to navigation?

Gen. BEACH. If you are going to use that basis for determination; that is, if you are going to allow the amount which the United States would have to spend in order to provide navigation over this stretch of river without providing any power whatever.

Mr. FIELDS. Would Dam No. 2 alone make the river navigable over the shoals?

Gen. BEACH. No, sir; it needs Dam No. 3 also.

Mr. FIELDS. How much 6-foot navigation would you get from Dam No. 2?

Gen. BEACH. We would get 6-foot navigation up to the side of Dam No. 3.

Mr. FIELDS. That would be the minimum?

Gen. BEACH. Yes.

Mr. FIELDS. How much 6-foot navigation would you get from Dam No. 3?

Gen. BEACH. Dam No. 3 would back the water up a good deal farther than Dam No. 2, because that section of the river does not have as steep a slope. I have not looked up the exact figures recently, but it is my impression that it would go about 60 miles.

The CHAIRMAN. If you will permit me, Mr. Fields, the Secretary of War in his letter to Congress shows that it will go 63 miles.

Mr. FIELDS. Dam No. 1 has nothing to do with the power proposition, but relates to navigation only?

Gen. BEACH. Dam No. 1 is navigation only. It is a dam with a small lift, too small to be provided with a power-house adjunct.

Mr. FIELDS. It does not amount to a very large item?

Gen. BEACH. I think our estimate for that is about $1,400,000.

Mr. FIELDS. I believe you stated yesterday that no examination had been made for the foundation of Dam No. 3. I have House Document 1262, Sixty-fourth Congress, first session, which states on page 54 that some inspection was made there. I just wanted to call that to your attention. You probably had forgotten that when you testified yesterday.

Gen. BEACH. I was going to ask the committee for permission to say a word upon that point, because I found by speaking with certain parties that my statement was misunderstood.

The CHAIRMAN. You may proceed to explain that.

Gen. BEACH. I did not mean to say that no examination had been made. What I intended to say, or what I desired to be understood as saying, was that the examination which we made into foundation conditions at Dam No. 3 had not been sufficient to let us make a definite plan for the foundations at that locality. We have had several borings, and the borings have shown some cavities. Now, the borings we did make were not sufficient to develop the extent of those cavities, or to determine to what extent that rock underneath the sand was honeycombed, and I felt we had to allow a greater amount for the foundation conditions at that locality in our estimates than might possibly be necessary if we had fully developed the facts at our disposal.

Mr. FIELDS. I believe this report shows that 133 holes were bored, and in the 133 holes three cavities were found. I will insert it in the record at this point.

(The report referred to by Mr. Fields is as follows:)

Below is given a table showing core recovery at each dam site:

	Dam No. 2.	Dam No. 3.
Number of holes	90	133
Total linear feet in rock	5,194	4,947
Aggregate length of cores recovered	4,591	4,003
Percentage of core recovery:		
Maximum	99.0	96.4
Minimum	73.0	52.4
Average	88.4	80.7
Seams:		
Number	100	58
Aggregate depth (feet)	22.94	18.33
Cavities:		
Number	12	3
Aggregate depth (feet)	24.85	25.86

Gen. BEACH. I have here the estimates for lock and dam No. 1. It is $1,400,000, as I stated a few moments ago.

Mr. FIELDS. General, the Secretary of War states that the Air Nitrates Corporation has notified him in writing, or the letter probably went to you in

reply to the invitation you extended, and that is why I ask you this question—that the Air Nitrates Corporation claims the right to exercise the option which it claims to have to purchase Nitrate Plant No. 2 under as favorable terms as offered by Mr. Ford. Was this Air Nitrates Corporation invited to submit bids along with Mr. Ford and the other people to whom invitations were extended?

Gen. BEACH. I do not remember whether an invitation was sent to them or not. I would have to look that up. I would like to state that their letter has not been referred to my office, as far as I know.

Mr. FIELDS. Do you know whether or not an invitation was extended to Mr. James B. Duke?

Gen. BEACH. It was.

Mr. FIELDS. Do you know what his connection is with the Air Nitrates Corporation?

Gen. BEACH. I understand that he is closely connected with that company.

Mr. FIELDS. Do you know whether or not he is also connected with the American Cyanam'd Co.?

Gen. BEACH. I have been told that he is, but I have no proof of my own knowledge.

Mr. FIELDS. Did Mr. Duke submit a proposition to lease plant No. 2?

Gen. BEACH. He did not. He wrote a letter stating that the whole project at Muscle Shoals was very inadvisable and foolish on the part of the Government. That is practically a synopsis of his letter.

Mr. FIELDS. Will you put his letter in the record in its entirety?

Gen. BEACH. I will.

Mr. FIELDS. Do you know whether or not Mr. Duke requested Mr. Lee to prepare a recommendation or a letter upon the subject, and if so, was it submitted by Mr. Duke or by anyone else?

Gen. BEACH. Mr. Duke sent Mr. Lee's report to me. I have here Mr. Duke's letter which I could read, if the committee would care to have it.

Mr. FIELDS. I would be glad to have it read for the information of the committee.

Gen. BEACH (reading):

SOUTHERN POWER CO.,
New York, June 24, 1921.

LANSING H. BEACH,
Major General, Chief of Engineers, United States Army,
Washington, D. C.

DEAR SIR: In further reply to your letter in which you ask whether I am interested in any arrangement that might enable the Government to derive a reasonable return from its investment should it complete the Wilson Dam and hydraulic power plant at Muscle Shoals, on the Tennessee River, let me say that I have given this subject some consideration. I have also examined the report of Mr. W. S. Lee, vice president and chief engineer of the Southern Power Co., on the Muscle Shoals situation. My conclusions follow:

1. The steam-power stations built during the war to supply the Government's nitrate plants—No. 1, at Sheffield, Ala., and No. 2, at Muscle Shoals, Ala.—are of the most modern design and of high efficiency for use in connection with the nitrate plants. They are adequate sources of power for these plants in the emergency of war. They render unnecessary for military purposes the completion of the Wilson Dam and hydroelectric power station.

2. Under the law appropriating money for Muscle Shoals hydroelectric development, cooperation between the Government and any private corporation in the use of such development is specifically forbidden. Unless this law is amended the Southern Power Co. can make no use of power from this dam.

3. The cost of the Muscle Shoals hydroelectric development, estimated before the war at $18,000,000, in April, 1920, by the Secretary of War at not less than $25,000,000, and in February, 1921, by representatives of the Government at $50,000 000, will be not less than $56,000,000 if completed at this time. This cost is of importance as indicating the difficulty which the Government will encounter in securing an adequate return upon its investment should it complete this project now.

4. The primary power available at Muscle Shoals has, in Mr. Lee's opinion, been largely overestimated. Measured in kilowatt hours annually at various load factors that power will be as follows:

At 100 per cent load factor, 413,018,000 to 416,107,000 kilowatts.
At 90 per cent load factor, 371,716,000 to 374,496,000 kilowatts.

At 65 per cent load factor, 268,462,000 to 270,470,000 kilowatts.
At 35 per cent load factor, 144,556,000 to 145,637,000 kilowatts.

I understand that the Government has been advised that the primary output will be 700,000,000 kilowatt hours annually, using the flow as it occurs each 24 hours. The serious discrepancy between 700,000,000 kilowatts and Mr. Lee's estimates arises from two causes:

A. The consulting engineer advising the Government has used as his minimum the average monthly minimum flow. Mr. Lee has taken as his minimum the minimum flow. Under the first method a heavy rainfall during the last of the month increases the average flow for the whole month, and therefore the minimum power estimate for that month. Inasmuch as the power station can not during the first of the month operate on water which falls during the last of the month, Mr. Lee's method of computation must, in my opinion, be followed, if we are to secure dependable estimates.

In this connection it has been suggested to one of the congressional committee investigating Muscle Shoals that there has been constructed above the Wilson Dam storage sufficient to overcome any periods of dry weather. Large storage projects have been projected, but Mr. Lee has investigated those actually constructed and finds that they are not of size sufficient to increase substantially the primary power of Muscle Shoals.

B. The Government's estimate of 700,000,000 kilowatt hours annual primary output and the revenue to be derived from it assumes a load factor of 100 per cent. I know of no public utility corporation that attains such a load factor.

The load factor of the Southern Power Co. is less than 50 per cent. I would regard a load factor of 65 per cent as unduly favorable to the project; no power company in the South has such a load factor, but even at that figure the primary power for Muscle Shoals will be less than 40 per cent of the 700,000,000 kilowatt estimate.

The power companies of the South can not take power from the Wilson Dam at a 100 per cent load factor, for they have plants which can furnish all the power they need for this part of the load. Under the plan proposed to the Government for Muscle Shoals power distribution the power companies of the South would have to shut down a part of their power equipment in order to use the 100 per cent of the primary power from Muscle Shoals. This they can not afford to do.

5. So far as the Southern Power Co. is concerned, the cost of transmission from Muscle Shoals to the Southern Power Co.'s market is prohibitive. Not less than 420 miles of transmission line would be required. The capital investment involved would exceed $20,000,000. Transmission costs based on so large an investment are more than the traffic will bear. As a matter of fact, for $20,000,000 the Southern Power Co. can develop in its territory more hydroelectric power of its own than could be transmitted over the proposed transmission lines. Furthermore, if the Government will, at its own expense, construct transmission lines from North Carolina to Muscle Shoals the Southern Power Co., after investing $20,000,000 in new hydroelectric plants in its territory in North Carolina, will sell to the Government at the North Carolina end of such transmission lines primary power at 3 mills per kilowatt-hour on the 100 per cent load factor proposed by the Government, instead of at the four and four-tenths mills charge proposed by the Government for primary power at the Wilson Dam.

The market for power from the Muscle Shoals Dam has, in my opinion, been overestimated. The demand for power in this district during the war has materially decreased. Some companies have an excess supply. The shortage in any one company or in all combined, including those which, like the Southern Power Co., are too far away to take from Muscle Shoals, is less than the primary output of the Shoals and is likely to remain so for some years. One reason for this overestimate is that the Government's consulting engineer has counted on supplanting most of the steam power within electric transmission distance. In practice all steam power can not be replaced by hydroelectric. There are many isolated cases where the cost of transmission is so great that steam power remains cheaper even though generated by an inefficient plant.

6. I have said enough of the cost of generating power in the territory of the Southern Power Co. and of transmission costs to indicate that the estimates of the price at which power can be sold from the Wilson Dam will prove disappointing. Primary power on a 40 per cent load factor is being sold in the South at 20 per cent less than the rate proposed for the sale of power from the Wilson Dam. It only remains for me to add that the estimates of revenue to be derived from the sale of secondary power are even less reliable. There is no dependable market for four months' secondary power in the southern field.

With every desire to assist the Government in the solution of its problem at Muscle Shoals I am forced by the facts to the conclusion that the Government should leave the permanent work as it is and salvage the construction plant. The Government should then wait until labor and materials render possible the completion of the project at reasonable cost and until there has developed some near-by use for power at the Wilson Dam at an 80 or 90 per cent load factor.

The loss in discontinuing and deferring the work will be small compared to the loss which will inevitably be sustained if the work is completed at this time. Meanwhile, the Government should maintain the nitrate plants and their steam power stations in stand-by condition, ready for war.

In my opinion, the United States Government can not, at the present time, complete the Wilson Dam and hydroelectric plant and obtain a reasonable return on its investment.

I have referred several times to Mr. Lee's report on this subject. This report is exhaustive. I have no doubt that, should you wish to avail yourself of the information it contains, Mr. Lee would be glad to hand a copy to you.

Very truly, yours,

J. B. DUKE, *President.*

Mr. FIELDS. So this gentleman who is insistent upon his right to lease this proposition does not think very favorably of it for some reason, and therefore it seems he would not go very far toward the operation of it if the Government should turn it over to him.

What is the American Cyanamid Co.? Where does it operate? Is it connected with Niagara Falls?

Gen. BEACH. It has a plant at Niagara Falls. I understand the larger portion of its production comes from the Canadian side.

Mr. FIELDS. And at any other points in the country? What is the extent of its operations?

Gen. BEACH. I could not answer that, I do not know.

Mr. FIELDS. Anyhow, it is a part of this Niagara proposition.

Gen. BEACH. That is a fertilizer proposition I have not gone into very thoroughly.

Mr. FIELDS. Do you recall a joint letter written by four southern power companies in response to your request for bids, and would you give us the gist of that letter?

Gen. BEACH. There was a letter received by me on June 2, 1921. It is signed by the Georgia Railway & Power Co., by H. M. Atkisson, chairman board of directors; the Columbus Power Co., by H. H. Hunt, vice president; the Central Georgia Power Co., by P. G. Gossler, vice president; and the Tennessee Power Co., by C. M. Clark, president.

The letter is quite long, being seven pages of legal cap, and in a general way they state they can not utilize the power and they regard the construction as inadvisable. I would state that these gentlemen all came to me together and handed me the letter. After I read the letter I asked them if they realized what impression it made on me, and they said no, and I told them that it struck me as exactly the kind of a letter a man would write me who wanted to buy a horse I had for sale.

The CHAIRMAN. Pardon me, Mr. Fields, will you allow me to get the dates clear in my mind. This letter was written on the 2d of June, 1921?

Gen. BEACH. I notice it is dated at the end. It was dated May 20, 1921, but was presented in person by Mr. Atkisson and the other gentlemen at my office on June 2, 1921.

The CHAIRMAN. And Mr. Ford's first offer was presented on July 8, 1921.

Gen. BEACH. July 8; yes.

The CHAIRMAN. I simply wanted to get those dates in my mind.

Gen. BEACH. These gentlemen state that the completion of the dam is inadvisable, and there is nothing in it.

Mr. FIELDS. I gather from the chairman's questions that he probably has the impression these gentlemen considered a proposition; in fact, they did not submit a proposition at all?

Gen. BEACH. No, sir; they advised me I was wasting my young life in trying to secure propositions.

Mr. FIELDS. In order to keep that matter straight, I will ask you to put that letter in the record.

The CHAIRMAN. Mr. Fields, will you let me ask just one other question: were they asked to submit a proposition?

Gen. BEACH. Yes, sir.

The CHAIRMAN. And this is their answer?

Gen. BEACH. This is their reply.

Mr. FIELDS. Recommending against the development of Muscle Shoals?

Gen. BEACH. Yes, sir.

(The letter referred to follows:)

The United States Government, through Gen. Lansing H. Beach, Chief of Engineers, asks the southeastern power companies the following question:

"The Secretary of War has directed me to ascertain what arrangements can be made to derive a reasonable return upon the investment if the United States completes the dam and hydraulic power plant at Muscle Shoals, Tennessee River."

The answer to that question depends upon a correct determination of the following points:

(1) What commercially usable power output can be produced at Muscle Shoals, Tennessee River, taking into consideration the flow of the river, its characteristics, and Government regulation requiring a uniform river flow for navigation of not less than 10,000 second-feet at all times?

(2) What market is available for the sale of the power and at what rates?

(3) What gross revenue can be derived from the sale of the commercially usable available power output?

ANSWER TO QUESTION (1).

(*a*) Based on data contained in various reports available, which further investigations have confirmed, the continuous 24-hour primary power, i. e., 100 per cent use of available power, is approximately 700,000,000 kilowatt-hours per annum.

This figure is arrived at by assuming a plant capacity of 100,000 kilowatts and operating at 100,000 kilowatts for 12 daylight hours and at 60,000 kilowatts during 12 night hours. To obtain a plant capacity of 100,000 kilowatts during periods of high water it will be necessary to have an installation considerably in excess of that amount.

The portion of the 700,000,000 kilowatt-hours primary power per annum which could be used under existing commercial conditions in southeastern territory estimated to be 570,000,000 kilowatt-hours per annum maximum, including displacement of approximately 135,000,000 kilowatt-hours at present produced by steam; and in view of the uncertainty of the amount of steam which could be displaced and of the amount of power which could be taken at night, it would be safer to estimate upon not to exceed 500,000,000 kilowatt-hours maximum. It is estimated that the demand for power in southeastern territory will absorb this latter amount of additional power by the year 1927.

There are nine years during the 26-year period covered by the hydrograph of the Tennessee River at Florence, Ala., during which the total availability of primary power on 100 per cent load factor was less than 700,000,000 kilowatt-hours per annum. To supply such deficiencies, which will undoubtedly occur periodically in future as they have in the past, steam backing equal to the full capacity of the Sheffield steam plant, i. e., 60,000 kilowatts, must be exclusively available subject to call to meet such deficiencies; in certain years that capacity would not have been sufficient.

(*a*–1) The 10-months secondary power which it is possible to produce at Muscle Shoals has little or no commercial value.

ANSWER TO QUESTION (2).

(*b*) The only market for the power at present available is the market served by the southeastern power companies, and the rates for delivered power permitted to be charged by those companies are the published rates fixed by the various public utility commissions of the States in which those companies operate, and the value of the power at Muscle Shoals must take into consideration all elements of cost between generation and delivery.

ANSWER TO QUESTION (3).

(*c*) The amount of gross revenue which it will be possible for the United States to derive from the sale of power is definitely fixed by the amount of commercially usable power available and the prevailing rates fixed by public regulation.

REASONS FOR CONCLUSIONS AS TO PRIMARY POWER.

Considering the southeastern territory (including Muscle Shoals) a study of hydrographs of the various rivers now serving the existing and proposed power plants shows that years come periodically when drought is coincident and shortage of water is general. Such years have come with unfailing certainty and will undoubtedly come in future.

The safe capacity rating for public service uses of the existing and proposed water-power developments, even granting the full effect of coordination of watersheds, is limited definitely to the sum total of their respective combined capacity ratings during these low years. This limitation is absolute and contracts to deliver primary power must not exceed it, except as supplemented by steam production.

The hydrograph of the Tennessee River at Florence, Ala., for 26 years (from 1894 to 1919, both inclusive) proves that there were 9 years during the 26-year period when it would have been necessary to use the Sheffield steam plant (and in certain of those years its full capacity would not have been sufficient) to supply the deficiency in primary power. This condition will inevitably occur periodically in future and steam backing equal to the full capacity of the Sheffield steam plant must be exclusively available at all times to supply the deficiencies.

REASONS FOR CONCLUSIONS AS TO 10 MONTHS' SECONDARY POWER.

There is no coordination of the other existing and proposed water-power plants (including both storage and river flow plants) in the southeastern territory under any plan of operation that seems commercially practicable that will convert any large amount of Muscle Shoals secondary power into continuous primary power; at least it would not be safe for public service corporations serving the commercial uses of the public to base contracts on any such result.

The hydrograph of the Tennessee River at Florence, Ala., for 26 years (from 1894 to 1919, both inclusive) shows frequent periods of time varying from portions of a month to an entire month, to several entire months, up to a year, when there is no 10-month secondary power. There are only 3 years during the period of 26 years during which such periods or gaps do not occur. There are 7 years in the 26-year period observed during which there is either no 10-month secondary power at all or only a negligible amount. These gaps in the 10-months secondary power, together with the impossibility of predicting when they will occur, inevitably lead to the conclusion that the 10-months secondary power has no commercial value for public service use capable of measurement.

Steam backing to convert any substantial amount of 10-months secondary power into primary would be very expensive because a steam plant of large capacity would have to stand by subject to call, probably continuously, certainly for large and frequently recurrent portions of almost every year, for operation under extremely variable conditions both as to load and duration of time. Steam stand-by costs would be a permanent annual charge on the cost of the total power output, whereas the annual kilowatt-hour production by the steam plant would be relatively small and very costly, meaning an average cost per kilowatt-hour of the combined water and steam power produced, much in excess of water power cost.

To attempt to convert any substantial amount of 10 months' secondary power into primary power by use of the Sheffield steam plant owing to its characteristics and its location with respect to the distributing companies it would have to serve, would result in such a high average cost per kilowatt-hour delivered to the distributing companies as to make the total water and steam power produced unmarketable at the rates and standards of service fixed by the present rigorous public service regulations in the Southeastern States. This steam plant, consisting of only one unit of 60,000 kilowatts, must be held exclusively in reserve at all times to make up the deficiencies in primary power; therefore it will not be available to convert 10-months secondary power into primary power.

Mr. FIELDS. In order to keep that matter straight, I will ask you to put that letter in the record.

The CHAIRMAN. Mr. Fields, will you let me ask just one other question: were they asked to submit a proposition?

Gen. BEACH. Yes, sir.

The CHAIRMAN. And this is their answer?

Gen. BEACH. This is their reply.

Mr. FIELDS. Recommending against the development of Muscle Shoals?

Gen. BEACH. Yes, sir.

(The letter referred to follows:)

The United States Government, through Gen. Lansing H. Beach, Chief of Engineers, asks the southeastern power companies the following question:

"The Secretary of War has directed me to ascertain what arrangements can be made to derive a reasonable return upon the investment if the United States completes the dam and hydraulic power plant at Muscle Shoals, Tennessee River."

The answer to that question depends upon a correct determination of the following points:

(1) What commercially usable power output can be produced at Muscle Shoals, Tennessee River, taking into consideration the flow of the river, its characteristics, and Government regulation requiring a uniform river flow for navigation of not less than 10,000 second-feet at all times?

(2) What market is available for the sale of the power and at what rates?

(3) What gross revenue can be derived from the sale of the commercially usable available power output?

ANSWER TO QUESTION (1).

(*a*) Based on data contained in various reports available, which further investigations have confirmed, the continuous 24-hour primary power, i. e., 100 per cent use of available power, is approximately 700,000,000 kilowatt-hours per annum.

This figure is arrived at by assuming a plant capacity of 100,000 kilowatts and operating at 100,000 kilowatts for 12 daylight hours and at 60,000 kilowatts during 12 night hours. To obtain a plant capacity of 100,000 kilowatts during periods of high water it will be necessary to have an installation considerably in excess of that amount.

The portion of the 700,000,000 kilowatt-hours primary power per annum which could be used under existing commercial conditions in southeastern territory estimated to be 570,000,000 kilowatt-hours per annum maximum, including displacement of approximately 135,000,000 kilowatt-hours at present produced by steam; and in view of the uncertainty of the amount of steam which could be displaced and of the amount of power which could be taken at night, it would be safer to estimate upon not to exceed 500,000,000 kilowatt-hours maximum. It is estimated that the demand for power in southeastern territory will absorb this latter amount of additional power by the year 1927.

There are nine years during the 26-year period covered by the hydrograph of the Tennessee River at Florence, Ala., during which the total availability of primary power on 100 per cent load factor was less than 700,000,000 kilowatt-hours per annum. To supply such deficiencies, which will undoubtedly occur periodically in future as they have in the past, steam backing equal to the full capacity of the Sheffield steam plant, i. e., 60,000 kilowatts, must be exclusively available subject to call to meet such deficiencies; in certain years that capacity would not have been sufficient.

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ANSWER TO QUESTION (2).

(*b*) The only market for the power at present available is the market served by the southeastern power companies, and the rates for delivered power permitted to be charged by those companies are the published rates fixed by the various public utility commissions of the States in which those companies operate, and the value of the power at Muscle Shoals must take into consideration all elements of cost between generation and delivery.

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The above brief statement, together with a study of various reports, data, and hydrographs available, including original hydrographs of the Tennessee River prepared new from various standpoints at Florence, Ala., for 26 years (from 1894 to 1919, both inclusive) leads inevitably to the following conclusions in answer to the questions on page 2 of progress report of April 9, as follows:

"(*d*) From a strictly business commercial standpoint, could private capital afford to undertake the Muscle Shoals development, or make investments to use its output?

"(*e*) Can the Government afford to invest additional public money in the Muscle Shoals development?

"(*f*) If the Government, regardless of business considerations, in view of the large investment already made, determines to complete the Muscle Shoals development, on what basis, if any, can the southeastern power companies cooperate so that the United States may 'derive a reasonable return upon the investment,' or any partial return?"

ANSWER TO QUESTION (D).

(*g*) From a strictly business commercial standpoint, and considering the comparable cost of production of power at existing water-power plants and proposed water-power plants in the southeastern territory, private capital could not afford to undertake the Muscle Shoals water-power development, nor make investments to use its output on the basis of the present plans. Under prevailing conditions and rates for which power is sold under regulation in the southeastern territory the usable primary continuous available power output of the "dam and hydraulic power plant at Muscle Shoals, Tennessee River," can not be sold, delivered to the public-service market, at an average price that will pay operating expenses, taxes, reserve for renewals, and replacements, and a fair rate of interest on the estimated cost of the proposed plant as planned, and upon the necessary transmission system to reach the distant and only market.

ANSWER TO QUESTION (E).

(*h*) Nor can the United States afford to invest additional public money to complete "the dam and hydraulic power plant at Muscle Shoals, Tennessee River," as planned if the same tests which control the investment of private capital are applied; because on the latter basis it can no be made to derive a reasonable rate of interest on the estimated total investment from the sale of the commercially unsable available power to the public service market, nor even on the amount necessary to complete the plant as estimated by Government engineers.

ANSWER TO QUESTION (F).

(*i*) If the United States, in view of the large investment already made, determines to complete the Muscle Shoals development as planned, the southeastern power companies can cooperate so that the United States may derive a reasonable rate of interest upon some part of the cost of "the dam and hydraulic power plant at Muscle Shoals, Tennessee River." That portion of the investment upon which a reasonable rate of interest may be expected can be worked out with certainty because the flow of the river limits the amount of commercially usable power available and the value of the product is definitely fixed by the rigid public service regulation of rates and service in the Southeastern States.

But the Muscle Shoals water power development is being constructed, and it is reported the United States has already spent approximately $17,000,000 on "the dam and hydraulic power plant" and navigation improvement there. If the United States decides to complete "the dam and hydraulic power plant at Muscle Shoals, Tennessee River," some of the southeastern power companies can reasonably cooperate with the United States to the extent of formulating and making a definite proposition for the lease of the plant or purchase of its output, but only within the limitations stated above.

Economic conditions new existing, and undoubtedly permanent, demand that any arrangement with the United States for the lease of "the dam and hydraulic power plant at Muscle Shoals, Tennessee River," or for the purchase of the power output of the development must be based exclusively on the commercially usable primary power. The details of this proposition can be readily formulated if the principles and data upon which it is to be based are agreed to.

If it is true (as estimated by the Government engineers) that the cost of the completed dam and hydraulic power plant and navigation improvements at Muscle Shoals, Tennessee River, will be $50,000,000, exclusive of transmission costs according to the plans upon which it is being at present constructed, a large portion of that amount will have to be charged off or charged to war loss and improvement of navigation, because the portion of the cost upon which the sale to the public-service market of the commercially usable available power output can be made to derive a reasonable rate of interest is limited definitely by the existing regulation by public authorities of rates and service in the southeastern territory.

This statement is based upon engineering data, hydrographs, and estimates of costs as to Muscle Shoals, as compared to actual costs and results of seven southeastern power companies.

GEORGIA RAILWAY & POWER CO.,
By H. M. ATKINSON, *Chairman Board of Directors.*
COLUMBUS POWER CO.,
By H. H. HUNT, *Vice President.*
CENTRAL GEORGIA POWER CO.,
By P. G. GOSSLER, *Vice President.*
TENNESSEE POWER CO.,
By C. M. CLARK, *President.*

ATLANTA, GA., *May 20, 1921.*

Mr. FIELDS. General, just one other line of questions and then I am through. If you have it at hand, how much did the Panama Canal cost?

Gen. BEACH. I would not like to say offhand.

Mr. FIELDS. Could you put that in the record?

Gen. BEACH. Yes, sir.

Mr. FIELDS. Has it ever paid 4 per cent on the investment?

Gen. BEACH. I doubt very much if it has. I can ascertain that correctly.

Mr. FIELDS. Will you put that information in the record, and also what it is paying now?

Gen. BEACH. Yes. I believe from what I have heard recently that they are quite proud of the fact that it has recently approached a paying basis, and has more than covered expenses.

Mr. PARKER. May I ask what is the difference between kilowatt and horsepower—in other words, how you reduce kilowatts to horsepower? We have one statement in horsepower and the other in kilowatts.

Gen. BEACH. If you want to reduce kilowatts to horsepower, you divide by seven-tenths.

Mr. PARKER. Multiply or divide by seven-tenths?

Gen. BEACH. Divide by seven-tenths, and if you want to reduce horsepower to kilowatts you multiply by seven-tenths.

Mr. QUIN. Gen. Beach, for the benefit of the record, what is the official title that you hold in the United States Government?

Gen. BEACH. I am Chief of Engineers of the Army.

Mr. QUIN. You are a graduate of the West Point Military Academy, I presume?

Gen. BEACH. Yes, sir.

Mr. QUIN. What year, General?

Gen. BEACH. 1882; quite a ways back.

Mr. QUIN. You have had experience in engineering from that date up until now?

Gen. BEACH. Constantly.

Mr. QUIN. The statements that you have made with reference to the potentialities of the Tennessee River and its tributaries are based on actual experience and observation and knowledge acquired from your long experience in that line of work, as I understand it?

Gen. BEACH. I would state that they are based on quite intimate acquaintance. For four and a half years, before I became Chief of Engineers, I was division engineer of the central division, which embraces the Ohio River and all its tributaries, and I think I have been over every portion of the Tennessee River that a boat could go on, and have visited pretty nearly every part of its watershed.

Mr. QUIN. I want the record to show that so that these gentlemen making these propositions in the press trying to discountenance what we are attempt-

ing to do here and what you are attempting to do, may know that you understand your business.

What, in your judgment and from your knowledge of the matter, would it cost to make the Muscle Shoals stretch navigable without the construction of these dams, No. 2 and No. 3?

Gen. BEACH. As I stated, our estimate is something over $8,000,000.

Mr. QUIN. How much of the Tennessee River and its tributaries is now navigable without the construction of these dams and without the completion of the Muscle Shoals stretch for navigation?

Gen. BEACH. We can carry 6 feet from the Ohio at ordinary stages; that is, except the very lowest stages, as far as Florence, and we have a 2-foot navigation even at low water between Chattanooga and Knoxville. The portion between Florence and Chattanooga is not ordinarily navigable unless the river gets up several feet above low-water stage.

Mr. QUIN. How much would be navigable with the completion of these dams as contemplated, after they are completed?

Gen. BEACH. Dams No. 1, No. 2, and No. 3 would extend the navigation, as we said a while ago, to a trifle more than 60 miles above No. 3. That would require three low-lift dams between that point and Hales Bar, just below Chattanooga.

Mr. QUIN. How much would be navigable without the completion of the dam but with the opening of the Muscle Shoals stretch for navigation?

Gen. BEACH. I do not think I quite understand your question.

Mr. QUIN. What I am driving at is how much more will the completion of Dams 3 and 2 mean in navigation as compared with not completing the dams, but simply making the Muscle Shoals stretch navigable through dredging or otherwise?

Gen. BEACH. Dams 2 and 3 will extend the navigation about 90 miles.

Mr. QUIN. With the completion of Dam No. 2 and Dam No. 3, if Ford's proposition is accepted, the information is communicated to you that he intends to build other dams above there, as I understood you.

Gen. BEACH. Yes, sir; but I would state that I did not understand that he contemplated building dams in that section of the river below Chattanooga. He would probably, and if he were wise, he would go further up where the slopes are steeper and where the cost of building the dams would be less, and he could get a greater return in power for his money than he could by building them on that section of the river, which is very wide and where the slopes are not very steep.

Mr. QUIN. That would then be the cause of wonderful development of water power, and, of course, allied industries connected with it, if that were done, would it not?

Gen. BEACH. I take it for granted, if I understand your question that Mr. Ford would not build locks and dams unless he had some immediate use for the power which they would produce.

Mr. QUIN. Mr. Ford from your evidence intends to make this a great monument to his life for the benefit of the American people as I understand it.

Gen. BEACH. I did not say that.

Mr. QUIN. You stated it in other language. You stated that he wanted it to be a lifework for the agricultural interests.

Gen. BEACH. I stated in general terms what might be termed as Mr. Ford's desiring to build a monument to himself, but I made no specification as to any stones that he intended to put into that monument.

Mr. QUIN. Well, it occurs to me from the proposition he has made here that there is a large element of philanthropy in his ultimate intentions. If Mr. Ford, with the vast amount of wealth he has—more than 500 men could ever spend—would take upon himself this gigantic scheme involving worlds of work and study and money, it means either one of two things, that he is after amassing more money for himself or that he is endeavoring to accomplish something great for the benefit of the American people. Do you not think that that is a logical conclusion?

Gen. BEACH. Not necessarily. I made the statement that he desired to gain a reputation on certain lines. Now, he might desire to secure that reputation and a good financial return at the same time. I have not the information from him as to whether he desires to separate the two or not.

Mr. QUIN. If it were purely a selfish motive to make money for himself and his family and estate, would it not be a fine thing for the people if those dams

are constructed and this territory developed for the purposes which we believe his proposition shows?

Gen. BEACH. Unqualifiedly so.

Mr. QUIN. Some of the gentlemen engaged in competitive lines of water power think it inadvisable and foolish to proceed and complete these dams and develop this wonderful territory. Did any of them agree to lease it or buy it or submit a proposition that could be placed in a relative or comparative position to the one of Mr. Ford?

Gen. BEACH. Those letters which I have just placed in the record, I think, are the best answers to that question.

Mr. QUIN. To my mind they indicate they do not want it done, and I believe for the reason that it is in competition with their business. You do not know about the production of nitrates personally, do you, of your own knowledge?

Gen. BEACH. No, sir.

Mr. QUIN. That is under Gen. Williams's department. You do not know about the production of fertilizer?

Gen. BEACH. No, sir; not sufficiently to be willing to testify before the committee.

Mr. QUIN. You stated the river would be navigable to Florence, Ala.; where is Florence with reference to Muscle Shoals?

Gen. BEACH. It is practically at the lower end of Muscle Shoals. Dam No. 1 would be at Florence. Dam No. 1 would be just above the railroad bridge which you see on this map, which connects the town of Florence with the town of Sheffield. I would state that the town of Florence, in actuality, it not as large as shown on the map and does not reach up as close to No. 2 as the map would indicate.

Mr. QUIN. You would have, then, 6 feet of navigation from the Ohio River up to Florence at the lower end of Muscle Shoals?

Gen. BEACH. Yes.

Mr. QUIN. How many miles is it between Dam. No. 1 and Dam No. 3.

Gen. BEACH. A little less than 30 miles, or about 30 miles.

Mr. FISHER. General, something has been said about the available market for the water power if the Ford offer should be accepted. Have you ever made a survey of the industrial needs of the cities within 150 miles.

Gen. BEACH. No, sir.

Mr. FISHER. You are not familiar with the industrial needs, for instance, at Memphis, except in a general way?

Gen. BEACH. Only in a general way, knowing the city and its general business tendencies and size.

Mr. FISHER. You are familiar with the fact that Memphis is short on power for its industrial needs?

Gen. BEACH. Memphis has no water power immediately available. They have to depend upon coal.

Mr. FISHER. Are you familiar with the fact that even with the steam power that we have for our industrial plants, we are now short on that kind of power?

Gen. BEACH. I do not know.

Mr. FISHER. You are not familiar with that situation?

Gen. BEACH. I do not know the definite data on that point.

Mr. FISHER. You stated you are pretty familiar with the terriory through which the Tennessee River flows, I will ask you whether or not the farm lands through that country are sadly in need of thorough, scientific fertilization after many years of cultivation of cotton, and so on.

Gen. BEACH. Are you referring to the lands of the entire State or only those immediately adjacent to the Tennessee River?

Mr. FISHER. I mean the States of Alabama, Georgia, Tennessee, and Mississippi.

Gen. BEACH. I have understood and have been told on my trips through that section of the country that they do need fertilization very greatly.

Mr. WRIGHT. General, the foundations of Dam No. 2 are limestone, are they not?

Gen. BEACH. Yes, sir.

Mr. WRIGHT. There is no question about that being a suitable and safe foundation?

Gen. BEACH. At that particular point we think we are perfectly safe. We went into that question very carefully before we started the construction of the dam. Lime rock is always more or less an uncertain quantity, owing to the

fact that if water can run through it, through a crevice or in any other way, for any length of time, it dissolves the rock and makes cavities. That is the way the Mammoth Cave in Kentucky is formed, and that section of the country is all honeycombed with caverns, and you will find up there in that part of the country there are no creeks at all. You go through a farm and you will find a saucer-shaped depression which is the sinkhole or the drainage for that particular territory. The water collects there and then runs underground and finds its way through these cavities into the Green River and the Barren River and some of the other tributaries. This honeycombed condition exists more or less wherever you have limestone, but the excessive honey-combing which you find in that section has largely disappeared by the time you reach the Tennessee.

Mr. WRIGHT. You made such investigations there at Dam No. 2 that make it practical from an engineering standpoint to construct the dam, so far as the foundations are concerned?

Gen. BEACH. Yes, sir; we carried our borings in some cases over 100 feet in depth into the rock.

Mr. WRIGHT. So you think that is entirely practicable, then?

Gen. BEACH. Yes, sir.

Mr. WRIGHT. What would be the length of Dam No. 2 when completed?

Gen. BEACH. Almost 1 mile. I think it is about 4,800 feet.

Mr. WRIGHT. What would be the height.

Gen. BEACH. One hundred feet.

Mr. WRIGHT. Do you get material conveniently there for the construction?

Gen. BEACH. We obtain the sand and gravel a few miles below from the bed of the river. That is dredged up, washed, and then brought up and placed in bins on the work. The cement, of course, we have to buy and bring in by the ordinary methods of transportation.

Mr. WRIGHT. What are the nearest points at which you can secure this cement?

Gen. BEACH. That has varied. There are some points in northern Georgia where cement is made, and there are cement mills close to the Ohio. There are some in Indiana and Illinois.

Mr. WRIGHT. What is the horsepower which could be developed at No. 2?

Gen. BEACH. We have ordinarily counted on about 100,000 primary power.

Mr. WRIGHT. What is the secondary power?

Gen. BEACH. The secondary power is probably about 440,000 horsepower.

Mr. WRIGHT. General, there is quite a difference in the cost of primary and secondary power, is there not?

Gen. BEACH. To the consumer; yes, sir.

Mr. WRIGHT. I mean, to the consumer.

Gen. BEACH. Yes, sir.

Mr. WRIGHT. Will you please explain the difference between primary and secondary power, and how each is used?

Gen. BEACH. Primary power is that which the company can contract to deliver at the switchboard of the consumer at any time he wants it. Consequently, it has to be power which is available every day or at any hour of the day. Secondary power is power which is not primary power, and you may have different grades of secondary power. For instance, at Muscle Shoals you would have a very large amount of power which might be called primary for 8 months of the year, but it is not primary for the full 12 months. You have another amount which would be primary for six months, if I may use the term in that way, and you have quite a considerable portion which would be primary for four months of the year, a still larger amount. It manifestly follows that anybody that can adopt any method of manufacture or any use for this secondary power is enabled to use it very advantageously. I understand that Mr. Ford contemplates putting in electrical furnaces, and he could use a very large portion of that secondary power almost as advantageously in that way as if it were primary power.

Mr. WRIGHT. General, speaking about transmission, the percentage of loss in the current or in the power is increased the further you undertake to transmit the current, is it not?

Gen. BEACH. Yes, sir; that is, you get less at the end of the line.

Mr. WRIGHT. What is the average percentage of loss in transmitting it 50 miles?

Gen. BEACH. I could not state that offhand, because it would depend a good deal on the methods used. They are constantly improving methods of insulation, and it varies considerably with the voltage at which it is placed. You understand, voltage means what you might call the electrical head, the push of the current, and if you have a high voltage you get through more electricity than if you have a low voltage.

Mr. WRIGHT. It is true that the percentage of loss has been reduced very materially by modern appliances and inventions?

Gen. BEACH. Oh, yes. The extension of the distance to which they are sending electricity now proves that, and I have been informed by some of the best electrical engineers that they soon expect to be able to transmit electricity directly to a distance of 400 miles as efficiently as they formerly did to a distance of 200 miles.

Mr. WRIGHT. Have you made an estimate of how much per kilowatt it would cost to produce power at Dam No. 2?

Gen. BEACH. No, sir; I have not figured that out exactly. Col. Cooper gave that in his testimony, but I have not done that myself.

Mr. WRIGHT. You know the average price at which it is sold by the power companies in that section; that is, primary power?

Gen. BEACH. Yes, sir. Those parties who signed that joint letter stated that they got an average of 9 mills per kilowatt.

Mr. WRIGHT. General, what is the life of an ordinary cement dam such as you are constructing down there?

Gen. BEACH. It ought to be perpetual if your cement is of proper quality.

Mr. WRIGHT. And, of course, properly constructed, there is not much element of risk in its being washed away?

The CHAIRMAN. Mr. Wright, will you permit me to ask just one question?

Mr. WRIGHT. Certainly.

The CHAIRMAN. I think those gentlemen said they were able to furnish the power at 3 mills per kilowatt, whereas it would cost a little over 4 mills if the dam was constructed by the Government?

Gen. BEACH. I asked them what their average selling price per kilowatt was and they told me 9 mills.

Mr. WRIGHT. General, the construction of storage dams on the upper part of the river and its tributaries would very materially increase the production of power at Dams 2 and 3, would it not?

Gen. BEACH. Every reservoir which is built on the Tennessee above Muscle Shoals is naturally beneficial to Muscle Shoals because the difference between the primary power and the second power is due to the loss of water which escapes during high stages of the river and leaves only a relatively small proportion to flow down during the low stages. Every reservoir that is built on the upper section of the river will impound that much flood water, and consequently tend to equalize the flow, keep the flood waters from being wasted, and supposing, naturally, that the outflow from your powerhouse is regular, it will tend to increase the low water flow. Consequently, with the construction of dams on the upper river or its tributaries, the amount of primary power at Dam No. 2 will be increased.

Mr. WRIGHT. General, speaking about the market for this power, you have named Memphis as possibly the greatest prospective market for this power. Of course, there are numerous towns and cities dotted all over that country of smaller size than Chattanooga, Memphis, Nashville, and the others you have mentioned that would be customers for this power, would they not?

Gen. BEACH. I imagine that they would, but I would say from my experience with the people of that section, they are very slow to adopt innovations. I am referring now to the people of the rural sections of that country.

Mr. WRIGHT. But taking good-sized towns like Ozark, Florence, Huntsville, Decatur, and towns of that size and character, they are modern to the extent that they want electric lights and they use a grea deal of hydroelecric power in their small industries, do they not?

Gen. BEACH. No, sir; the amount which they would consume in manufacturing and for domestic purposes under present conditions would be very small indeed.

Mr. WRIGHT. It is true, generally speaking, that the use of hydroelectric power is constantly on the increase, is it not?

Gen. BEACH. Oh, yes; decidedly. I find that there are manufacturers that use electric power when it costs them more than steam power. They do that for two or three reasons, one of the first reasons is that it is ordinarily independent of the human equation, as nearly so as you can make it. It does not depend on whether the firemen happen to get hold of some fire water or some-

thing of that kind which incapacitates them from attending to the furnace. It is also cleaner and does not involve the question of ashes or the distribution of ashes and cinders. It also removes one very aggravating feature of the labor-union question.

Mr. WRIGHT. General, getting back to the leased period, I think I understand from what you said pretty thoroughly your position, but is it not true that all power companies or people who want to invest in the construction of electrical plants insist on long-term leases? Is not that the general rule?

Gen. BEACH. It is when they think they have a good bargain.

Mr. WRIGHT. Well, let us analyze that just a little, General. In the first place it requires some years to get the plant constructed and equipped, and that must be taken into consideration, and you estimate that perhaps it would require two and a half or three years to complete Dam No. 2.

Gen. BEACH. Yes.

Mr. WRIGHT. There is an immense amount of capital entering into that project all the while, and the investor is waiting for some return, and then after he gets his plant completed and equipped he must develop a market for his power, and, as you suggested, the more sparsely the territory is inhabited the longer he will be in finding a market for his power.

Gen. BEACH. Yes, sir.

Mr. WRIGHT. All those things must be taken into consideration, and he has his capital invested while he is waiting a market for his product. Is not that the reason for it?

Gen. BEACH. That feature of the case should be taken into consideration, it seems to me, in determining the life of the lease.

Mr. WRIGHT. In other words, you do not think a general, universal rule should be applied to all these projects, and that it should depend on the circumstances in each case?

Gen. BEACH. The point I try to make is that a rule which would be perfectly just and equitable to the lessee in the case of a small installation might be a hardship on a lessee who had a very great amount to dispose of.

Mr. WRIGHT. General, at this moment you can not think of a project of the magnitude of the Muscle Shoals project where you would be more in favor of a long-term lease than at this plant?

Gen. BEACH. No, sir. I think if it is justified anywhere it is justified at this locality.

Mr. WRIGHT. Of course these dams No. 2 and No. 3 would be the property of the Government at the end of the 100-year lease.

Gen. BEACH. Yes, sir.

Mr. STOLL. General, you are familiar with all the great water powers in the United States in a general way?

Gen. BEACH. I have seen several of them.

Mr. STOLL. What I want to know is whether there is any water power in the South equal to the Tennessee River or the Muscle Shoals water power?

Gen. BEACH. No, sir.

Mr. STOLL. Is there any east of the Mississippi River that is equal to it?

Gen. BEACH. Nothing that is installed so far except Niagara.

Mr. STOLL. I mean wholly within the United States. That is partially in Canada, is it not?

Gen. BEACH. Well, you understand that at Niagara Falls it is divided into two portions, and we control our part and the Canadians control theirs.

Mr. STOLL. Well, with the exception of Niagara, is there any water power east of the Mississippi equal to Muscle Shoals?

Gen. BEACH. No, sir.

Mr. STOLL. How about west of the Mississippi?

Gen. BEACH. I doubt very much if you woud find anything west of the Mississippi. I do not know of any possible case except—I do not believe even Priest Rapids on the Columbia River would be equal to it, but I am not certain about that.

Mr. STOLL. The Tennessee River project or the Muscle Shoals project, at any rate, is one of the biggest projects in the country.

Gen. BEACH. It is unquestionably one of the biggest projects in the country.

Mr. GARRETT. General, looking back over your many years of experience in developing waterways and water powers, that have meant the great development of the country, has not your great trouble been with pessimists, during all that time, and because they could not calculate the immediate results of a great project, they could not see why it should be undertaken?

Gen. BEACH. That has been, to a certain extent, a drawback, but I would state that I think the greatest drawback to the development has been the opposition of people who think their interests are going to be adversely affected.

Mr. GARRETT. Well, I will accept the answer of the gentleman in that respect in toto. Now, General, you have covered this subject very completely but I just want to get your general idea about projects of this character or about other great projects. So far as the public are concerned, they have not been able at the beginning to see the great results that have followed the work of men like yourself who had the vision of what the development meant. Has not that been one of the great troubles in developing the great waterways of the country, and much of the money that has been spent, at the time it was being spent, when the criticisms were made of the appropriations, were made largely by people who could not see the immediate results, and is it not also true that you can hardly calculate the immediate results? For instance, we will take the Panama Canal, there was great criticism at the time of the beginning of that project, that it would be a failure, and would be a useless expenditure of money. Those critics have all passed away, so far as the Panama Canal is concerned, have they not?

Gen. BEACH. I think I have heard some transcontinental railroads making remarks recently.

The CHAIRMAN. I wanted to ask a question about that very matter when you were through. I was in Congress when we put through the Panama Canal bill and we were told that the probable cost would be $120,000,000. It finally grew up to $400,000,00, so that they missed the final cost by a good many million dollars. So that, after all, it is all problematical when you start out, and you can not tell just what you will run up against before you are through.

Gen. BEACH. That is just one of the points, Mr. Chairman, that I endeavored to make yesterday, that while people can make an estimate on unit quantities and the price of the unit quantities, those who have not been accustomed to handling work in the rivers or large works where such an element of uncertainty is involved in the conditions, almost invariably make the mistake of underestimating.

Mr. GARRETT. General, I want to ask you this general, hypothetical question, and you can answer it if you see fit: Assuming when these dams are completed, and assuming that the lease should be left to Mr. Ford as submitted, and taking into consideration the general conditions of the country surrounding this project, the opportunity to manufacture large quantities of fertilizer for the agricultural and the horticultural people and the truck growers and everybody who uses fertilizer, and the extension under modern plans of this electric power far out into the country, all around them, in your opinion, would you consider this a project that should be adopted by the Congress, or would you care to express an opinion upon that particular feature of it?

Gen. BEACH. Your question rather involved two considerations. You spoke about the development of the country and at the same time assigning it to Mr. Ford.

Mr. GARRETT. Or to any one else.

Gen. BEACH. It is my understanding that if Mr. Ford is given the lease of the power from this dam, he will establish industrial plants right in that vicinity. Now, that will unquestionably be an immense benefit to that section of the country, but the general growth due to the existence of that power will naturally, outside of its award to somebody who has the financial ability to develop it immediately, be very slow, indeed. If the member from Tennessee will pardon my saying so, I made the remark about the people in the rural sections down there being very slow. A few years ago I had occasion to hold a hearing on the Tennessee River in order to help the people of Chattanooga obtain flowage rights. Congress had made the appropriation for a dam, with the condition that the flowage rights should be provided without expense to the United States. The people of Chattanooga, in endeavoring to get those flowage rights, found they could not do a thing with the owners of the property. In a few cases they would sell at exorbitant prices, and in a good many cases they would not do anything at all. They asked me to come down and help them, and I went down and held a hearing, and they asked me what the benefits would be if that dam were built. I said that in the first place the construction of the dam would bring in a large amount of money to be spent right in that section. They said: "We do not think so. The contractor will get the money and the store people that he brings along with him will get it, but we won't get any of it." "Well," I said, "What

is more, it will enable you to ship your goods to market more cheaply than you can do so at the present time." They said, "That does not interest us. The middlemen will get all that." I said, "Well, the fact that the property can be developed will bring people down here with money and that will help develop your section." They said, "We have got all the people here now we want and we don't want anybody here with any more money than we have got."

Mr. GARRETT. That is along the same line as these letters you have been receiving from people concerning this project to the effect that it will be a failure. Those who do not want to furnish you any dumping ground or things of that kind were those directly interested and wanted to dispose of whatever they might have to the Government or to the other people at whatever prices they might secure, and they were not taking into consideration the general welfare but were considering their own particular interests.

Gen. BEACH. No, sir; they were people who were perfectly contented to go along the way that they were going, and did not want to be disturbed.

Mr. GARRETT. On that flowage question, did they not argue that the Government should take care of that, and afterwards did not Congress take care of it?

Gen. BEACH. I reported to Congress that it was absolutely impossible to fulfill that condition; that the people could not obtain the lands necessary for flowage rights, and Congress removed the restriction.

Mr. GARRETT. Has it no always been true, General, in all of your experience, that people everywhere, generally speaking, are slow to give way to progress and they are rather slow to change their conditions; that is, in the old, established parts of the country?

Gen. BEACH. You find that a trait of human character everywhere. You know that the people objected to the construction of railroads because a cow might get on the track.

Mr. GARRETT. And the men who drove their wagons objected to that because they would go out of business.

Gen. BEACH. The town of Frederick, Md., paid the Baltimore & Ohio Railriad Co. $10,000 to keep out of the town because it was one of the important points on the stage route to the West.

The CHAIRMAN. There are one or two things I think you can clear up very nicely, General, in connection with this matter. How long has this matter of the fixation of nitrogen from the air been in existence?

Gen. BEACH. That I could not answer without looking it up.

The CHAIRMAN. It is comparatively recent, is it not?

Gen. BEACH. Yes; I do not suppose it is 20 years old.

The CHAIRMAN. How long has Germany been using that method of securing nitrates, if you can recall?

Gen. BEACH. Well, longer than they let the rest of the world know; but the exact number of years I could not say.

The CHAIRMAN. How long has it been possible to secure nitrogen by fixation from the air here in the United States?

Gen. BEACH. You are getting into a branch of the subject, Mr. Chairman, with which I am not acquainted. This is outside of the work of my department, and I have information upon it only incidentally, and I would not like to give any evidence where my information is of that character.

The CHAIRMAN. My information has been that the whole proposition is comparatively modern.

Gen. BEACH. I do not think there is any question on that point.

The CHAIRMAN. That is, it has only been within 10 or 12 years that the thing has been developed. So that this is all a new development, and therefore it is reasonable to suppose that many additional inventions will be made, and that the process will be materially developed in the years to come?

Gen. BEACH. I do not think there is any question upon that point.

The CHAIRMAN. That is what I had in mind myself.

Mr. MCKENZIE. General, on yesterday afternoon, when you were testifying, I was unavoidably absent, and I am not going to ask you any questions at this time which might be a reiteration of the questions you have already answered. But I want to make an inquiry upon one point.

Under the Ford proposition, one of the things which the Government undertakes to obligate itself to do is the construction of Dam No. 3, and there has been some question and some criticism in connection with that matter, that it might be impossible to construct successfully a dam at that point because of the foundations. If that should happen, you can see it would very greatly change the conditions of the whole proposition.

I want to ask you now, as the Chief of the Corps of Engineers of the Army of the United States, if you are willing to give us unhesitatingly an assurance that in your judgment the Government will be able to perform that part of the contract in case we enter into the contract.

Gen. BEACH. From all the evidence that we have, the results of our borings at the site, I have no reason to believe that the construction of Dam No. 3 is impossible. It may be a little more expensive, proportionately, than Dam No. 2. But we have no reason to believe that it is impossible, and all our evidence goes to the effect that it is perfectly practicable.

Mr. MCKENZIE. You at least without hesitation are willing to assure us that it is a pretty safe gamble, so far as the United States is concerned?

Gen. BEACH. Yes, sir. You would have to buy a bigger pile of chips; that is the only condition.

Mr. MCKENZIE. Can you tell us, offhand, what the present return on the Panama Canal is?

Gen. BEACH. No, sir. I think it has recently gone on a paying basis; that is, it has covered expenses.

Mr. MCKENZIE. I think probably that is true, because I was informed day before yesterday that they had raised the wages down there. I am referring to the cost of operation.

Gen. BEACH. I understand that it is only recently that the revenue of the canal is more than the cost of operation.

Mr. MCKENZIE. It would amount to more than 4 per cent on the investment, would it not?

Gen. BEACH. The present return, as I understand it, has not reached the 4 per cent basis.

Mr. HULL. General, speaking of the worth of horsepower, it seems to me it would be interesting for the committee to know what the value of this horsepower would be, provided it could be sold at the rates that are now prevailing at such developments as Niagara Falls and the Keokuk Dam. I do not mean to say you can sell it, but I would like to know myself, if this dam is completed as proposed in the Ford offer and the power could be sold at the going rates that now prevail at Niagara Falls and the Keokuk Dam, what the value of the horsepower would be. I do not presume you can answer that question offhand, but if you can obtain the information and put it in the record, I shall be glad to have it. You can get that information, can you not?

Gen. BEACH. Yes, sir.

Mr. HULL. I might say, giving my impression of the matter, that the discrepancy in the cost of the Panama Canal, it seems to me, is too great for engineers to permit to go unchallenged. I think if it was investigated we would find that the great share of the difference in the cost of the Panama Canal is due to the change in the plans after they started to work; that is, not all of it, but a great part of it would be due to that.

Gen. BEACH. It would have cost more if they had constructed the Panama Canal on the original plans or continued the construction on the original plans.

Mr. HULL. I understand that, too. There is just another question I want to ask you in regard to Dams 1, 2, and 3. You stated in one place that to make the Tennessee River navigable you would have to build Dam No. 1, I believe, at a cost approximately of $4,500,000?

Gen. BEACH. No, sir; the amount was $1,400,000.

Mr. HULL. Then you stated afterwards that if you completed Dams No. 2 and No. 3, as proposed in the Ford offer, you would make the Tennessee River navigable for 60 miles. You meant with Dam No. 1, did you not?

Gen. BEACH. Dam No. 1 is such a short distance below Dam No. 2 that it does not make very much difference. It is only 4 or 5 miles below.

Mr. HULL. I understand that, but what I want to bring out is this: In considering this proposition of making the Tennessee River navigable, the Government will have to build Dam No. 1 itself, because that is not contained in the Ford offer; is that not true?

Gen. BEACH. That is correct; yes, sir.

Mr. HULL. You spoke of some of the power people writing to you. Have any of the fertilizer people interviewed you at all?

Gen. BEACH. No, sir; I have seen none of them.

Mr. HULL. Have they sent you any literature?

Gen. BEACH. I can only say that a few days ago I received circular No. 2, which said that further information could be given me if I desired it. I wrote

for it and it came, I think, day before yesterday morning, when I came up here, and I have not had a chance to read it.

Mr. PARKER. General, you spoke about the amount of waterpower in the United States. We had an investigation of this waterpower matter in connection with the waterpower bill some years ago, and my recollection is that the total amount of waterpower, as stated at that time, is from ten to twenty million, and three-quarters of it is west of the Rocky Mountains, in various streams that come from the snow mountains or in the Columbia River. I suppose you did not go into that investigation in regard to the entire United States?

Gen. BEACH. No, sir. The statement I made yesterday was to the effect that I believed that the Tennessee River had a greater possibility for development of waterpower than any other stream I knew of, except possibly the St. Lawrence River.

Mr. PARKER. You spoke about the western streams, and as I understood you, you said you did not know whether the Columbia was so great. My recollection was that it was larger.

Gen. BEACH. I was asked if this project was not greater than any that could be made upon the Mississippi River and I said I did not know how it compared with some on the Columbia.

Mr. PARKER. And there are likewise very great water powers in the streams coming from the Sierras, because of the enormous fall?

Gen. BEACH. Yes, sir; and they are developing those water powers out there very rapidly, and very beneficially.

Mr. PARKER. You do not make the comparison, then, in total horsepower. That will probably come from the report of the Waterpower Commission, which will tell all about that.

Gen. BEACH. I did not understand that the comparison was in the total. I understood that the comparison was on a single project.

Mr. PARKER. There are more rivers that are good in summer on account of the water coming from the snow mountains, or from a very cold country, like the Canadian rivers, than there are in our zone here, or in most of the United States; is that not so?

Gen. BEACH. Yes, sir.

Mr. PARKER. I pass to the other matter you mentioned, in which you said that the companies gave you the cost per kilowatt hour at about 9 mills, as an average. Did they give you the price at which they sold it?

Gen. BEACH. No, sir.

Mr. PARKER. Had you been informed that about two years ago there was an investigation by the Committee on Interstate and Foreign Commerce of the so-called power bill, in connection with power made by steam in the East and distributed, and that a very important statement was made by a Government witness concerning the price at which the power company sold their power? According to my recollection the statement was that in selling power to small consumers, they had to pay as high as 25 cents, and the manufacturers about 8 cents, but when the companies sold each other they absolutely sold it at about a cent, or a little under. Have you any information bearing upon that matter, or would you have to leave that to other people?

Gen. BEACH. I would have to investigate that matter.

Mr. PARKER. I can not give the exact figures, but there was such a tremendous difference that they seemed astonishing. You do not know whether or not the various power companies sell power to one another by relays and all that sort of thing, at prices as low as 1 cent a kilowatt hour, or that they did sell at prices as low as that?

Gen. BEACH. I know that they sell it commercially in Tacoma and Seattle, that is, power derived from the water coming down from Mt. Ranier at 1 cent a kilowatt hour.

Mr. PARKER. That is water power. I am talking, now, about steam power, and the sales of that power between the different power companies in the East. You do not know about that?

Gen. BEACH. I do not know about that; no, sir.

Mr. PARKER. You did not know that that had been thoroughly investigated at that time, and that the power bill, when it was proposed, did provide such power by establishing great power plants at the coal mines and distributing power from those?

Gen. BEACH. I know the superpower survey has been made. I am not familiar with the details of the report in connection with that.

Mr. PARKER. Who would be able to give it to us?

Gen. BEACH. I think probably Col. Keller, the present Engineer Commissioner of the District of Columbia, would be able to give you as much information on that point as anybody you could call locally.

Mr. PARKER. Does it or not seem to you to be important to know with reference to the value of this place what can be done in that way with steam?

Gen. BEACH. I should think it would be very important.

Mr. FIELDS. General, what time elapsed between the submission of your invitation to Mr. Ford and the receipt of his first proposition?

Gen. BEACH. Probably two months and a half or two months.

Mr. FIELDS. From the time you submitted it to him?

Gen. BEACH. From the time I first wrote to him.

Mr. FIELDS. Until his offer came to you?

Gen. BEACH. I do not think I wrote to him at quite as early a date as I wrote to the power companies in the South, because it did not occur to me at first that he would be interested.

Mr. FIELDS. In Exhibit E, on page 22 of the Secretary's report, which exhibit is signed by yourself, you make an interest charge of $1,875,000 against the Ford proposition for the investment of the Government during the construction period and the first six years of the lease. Is that an ordinary interest charge, or is not that out of the ordinary on Government propositions?

Gen. BEACH. You will notice in the second sentence below that tabular statement it says "such carrying charges are not customarily considered in Government work."

Mr. FIELDS. Do you know whether or not a charge of this kind has ever been considered in Government work?

Gen. BEACH. I do not know of its ever being included before. I think if the Government did include those that the appropriations by the Rivers and Harbors Committee would be very differently made than they have been made for many years past.

Mr. FIELDS. Upon what do you base that opinion—how do you reason that out?

Gen. BEACH. We have spent in the course of the last 15 years something like $60,000,000 on the Ohio River to improve that stream, and the interest charges on that, it seems to me, if Congress were going to consider them, would help expedite the work.

Mr. WRIGHT. General, in the construction of these plants and development of electrical current by water power it is very necessary or desirable to have an auxiliary steam plant in connection with it, is it not?

Gen. BEACH. That depends entirely upon the manner in which the power is utilized. If you are selling your power you have to provide some means to cover the production of the total power for which you have made a contract. If you can sell more than your primary power itself, and you have a period where the secondary power is of value, you can supplement your primary power you obtain from the water by a steam plant, making a large portion of your secondary power primary.

Mr. WRIGHT. Then it is very desirable, from the standpoint of a breakdown. The consumer wants his power with regularity.

Gen. BEACH. Yes, sir.

Mr. WRIGHT. That is also an element, is it not?

Gen. BEACH. That is quite an element. We could, of course, guard against that by duplication of transmission lines. It would be a question of whether the duplication of transmission lines for the establishment of a separate steam plant would be more economical.

STATEMENT OF COL. JOHN A. HULL, ACTING JUDGE ADVOCATE GENERAL, WAR DEPARTMENT.

The CHAIRMAN. Colonel, we are discussing the proposition of Mr. Ford for certain rights at Muscle Shoals, and it seems that the Alabama Power Co. and the Air Nitrates Corporation also make claims for those separate propositions. I understand that you have looked into the matter very fully and are in a position to explain the matter to the committee at this time.

Col. HULL. The question as to the Alabama Power Co. was submitted to the office in November with the request to give it great expedition, so it was there a comparatively short time. I made a report to the Adjutant General of the Army, under date of November 16, 1921, and I have a copy of that report with me.

(Thereupon the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF COL. JOHN A. HULL, ACTING JUDGE ADVOCATE GENERAL, UNITED STATES ARMY—Resumed.

The CHAIRMAN. Colonel, at the time of adjournment you were going to offer some letter for the record. Will you kindly continue your statement just as you were doing, and in your own way tell the story.

Col. HULL. I stated that at the end of October of last year, the office was asked its opinion as to what steps were necessary to clear title, so that the Warrior-Sheffield transmission line and the Warrior Power Plant and Substation, and other incidental properties of the Government erected by the Alabama Power Co. for the account of the United States and all as described in contract T–69, could be disposed of by the United States to other than the Alabama Power Co., and in such a way that they can all be operated as at present located. As a result, the office prepared an opinion dated November 16, 1921, a copy of which I will at this place insert in the record.

The CHAIRMAN. Is it very long?

Col. HULL. Four pages, sir.

The CHAIRMAN. Would you kindly read it so that the committee may have it before them.

Col. HULL. I will be glad to.

[First indorsement.]

WAR DEPARTMENT,
JUDGE ADVOCATE GENERAL'S OFFICE.
November 16, 1921.

The ADJUTANT GENERAL:

1. In the attached communication, dated October 31, 1921, the Chief of Ordnance states:

"The Secretary of War desires information as to what steps are necessary to clear title so that the Warrior-Sheffield transmission line and the Warrior power plant and substation and other incidental possessions of the Government erected by the Alabama Power Co. for the account of the United States, and all as described in contract T–69, copy of which is attached, can be disposed of by the United States to other than the Alabama Power Co. and in such a way that they can all be operated as at present located.

"The Secretary of War is desirous that this information be supplied at the earliest possible date."

2. Contract T–69, dated December 1, 1917, provided for the construction, maintenance, and operation of the following:

Warrior extension, a new power station, adjacent and in effect an addition to the power plant of the Alabama Power Co. on Warrior Creek, to be erected upon land belonging to the Alabama Power Co.

Warrior substation, a new substation and substation apparatus, to be erected near the Warrior extension, on land belonging to the Alabama Power Co., and to constitute an extension to the switching house of that company.

Muscle Shoals substation, a structural-steel bus and switching structure with concrete foundation, at Muscle Shoals, on land belonging to the United States.

The transmission lines for transmission of electrical current, extending from said Warrior substation to the Muscle Shoals substation, said lines to run over the present right of way of approximately 100 feet in width and 20 miles in length; thence over a right of way to be acquired by the Alabama Power Co. at its own expense, from its present right of way to land of the United States, and thence over the land of the United States to the Muscle Shoals substation.

The quarry branch line, for the transmission of electrical current, extending from a point on the transmission line, near Russellville, to a limestone quarry, the property of the United States, a distance of approximately 3,000 feet, the right of way "to be provided by or at the expense of the United States."

Drifton extension railroad, extending about 8,000 feet from the terminus of the disused Drifton branch of the Southern Railway to the Warrior extension, the right of way from the terminus of said disused track to the property of the Alabama Power Co., and all of the rails and rail-joint material to be furnished by the United States.

This office understands that all of these properties are included in the inquiry which is the subject of the present reference.

3. It is specifically provided in the contract that title to these facilities, with the exception of the Drifton extension railroad, shall be vested in the United States, although the land upon which are located the Warrior extension, the Warrior substation and the major portion of the transmission lines belong to the Alabama Power Co.

4. This contract, furthermore, provides for the maintenance and operation of these facilities and for electrical current to be supplied the Government thereunder for a period of 10 years, terminable, however, under the conditions therein stated; and that the right to receive such current may be transferred or assigned to the purchaser or lessee of the Muscle Shoals nitrate plant.

5. Under this contract, the Alabama Power Co. is obligated to purchase the Warrior extension and the Warrior substation, if at any time subsequent to three years after the termination of the war the United States shall so demand the price to be paid therefor to be fixed by arbitration. The power company may also at any time, upon its own election, purchase these two facilities, and if it elects so to do, the United States is obligated to sell to it. A fund which was to accumulate from sums withheld by the Government from its payments for electrical current was to apply on the purchase price, if sold under the above provisions.

6. It is further provided that if the Alabama Power Co. shall not purchase these facilities upon the demand of the United States, the property may be sold to another, subject to the conditions that the properties shall not be operated and that they shall be removed within six months after such sale. If not sold they must be removed by the Government at the expiration of the 10-year period of operation, or sooner under certain circumstances therein set out.

7. The Government also has the right under this contract, upon receipt of notice by the Alabama Power Co., to remove its transmission lines and appurtenances located upon land or rights of way belonging to the power company, to require the power company to purchase the same, at a value to be fixed by arbitration. If not sold the Government is obligated to remove such lines and appurtenances at the expiration of the 10-year period during which it is provided that current shall be supplied.

8. The contract is not specific as to the title to the Drifton extension railroad. As to that portion of it, however, which is on the right of way procured by the Government, this office considers that the title thereto may safely be considered as in the United States, in view of the fact that the contract is silent as to the ownership and the Government furnished not only the rails but also paid $40,000 toward the expense of its construction. The Government's ownership of that portion of such railroad, however, which is on land belonging to the power company is possibly limited to the ownership of the rails which were furnished by it. The contract makes no specific provision for disposition of this railroad.

9. This office is informed by the Chief of Ordnance that no energy has been furnished the Government under the contract T–69, but that such energy has been received under the terms of an informal agreement made in October, 1918. Therefore the situation is not complicated by any rights of the company under paragraph 2, article 17, of the contract. (See J. A. G. 164, Mar. 29, 1921.)

10. It is the understanding of this office that the plant constructed at Muscle Shoals was constructed under the authority of section 124 of the national defense act of June 3, 1916. (39 Stat., 166, 215.) That act authorized and empowered the President of the United States to construct, maintain, and operate plants for the generation of electrical or other power and for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizer and other useful products. It also empowered the President to acquire by lease, purchase, or condemnation lands, rights of way, and materials, minerals, and processes patented or otherwise necessary for the construction and operation of such plants and for the manufacture of such products. It also provided:

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital."

Notwithstanding the foregoing provision, the contract of December 1, 1917, was entered into with the Alabama Power Co. and in consequence the United States now finds itself the owner of a plant and transmission lines on land belonging to the Alabama Power Co. which, by the terms of the contract, the Alabama Power Co. may under certain conditions acquire, and the United States in accordance with the contract may require the company to purchase

the plant and transmission lines under certain circumstances not yet developed. The question presented to this office is how best to free the Government's plant and transmission lines from any interest which the Alabama Power Co. has therein, so that, if authorized, it may, if so advised, dispose of the property to some other purchaser or lessee free and clear of the rights of the Alabama Power Co. As to the lands constituting the right of way and site upon which the transmission lines and power plants are located, the United States has authority, under section 124 of the national defense act above cited, and other condemnation statutes, where funds are available, to proceed by condemnation if necessary to acquire the interest of the Alabama Power Co. therein; and that feature of the situation presents no difficulty. There remains but the right of the power company to purchase the plants and transmission lines belonging to the United States which by the terms of the contract are made personalty and its right, in the event that the United States should take the plants and lines under the terms of the contract and dispose of them to some other purchaser, to compel the United States or such purchaser to remove the same from the real estate. This right to compel removal will, of course, be nugatory in the event of the acquisition by the United States of the real estate upon which the transmission lines and plants now stand. This leaves to be considered only the contract right, if any, of the Alabama Power Co. to purchase the property of the Government which, by the terms of the contract, is to be considered personalty.

This contract was entered into December 1, 1917; then and now there is no authority for the sale of this plant or any part thereof. Therefore, the option to purchase purporting to be given by the contract is unauthorized and void. Consequently the only action necessary is to condemn the land constituting the right of way and plant sites, authority for which is granted by the statutes above cited.

J. A. HULL,
Acting Judge Advocate General.

Col. HULL. I might state that the conclusion that this option is null and void is based specifically on article 4, section 3, clause 2, of the Constitution, which reads in part as follows:

"The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States."

The CHAIRMAN. Colonel, section 124 of the national defense act of June 3, 1916, contains this provision:

"The plant or plants provided for under this act shall be constructed and operated solely by the Government, and not in conjunction with any other industry or enterprise carried on by private capital."

Are you familiar with that section?

Col. HULL. Yes, sir; I cited that in my memorandum.

The CHAIRMAN. That was passed on the 3d of June, 1916, and became the law of the land on that date.

Col. HULL. Yes, sir.

The CHAIRMAN. This contract with the Alabama Power Co. was negotiated in December, 1917, I think you said?

Col. HULL. Yes, sir; that is the date of the contract.

The CHAIRMAN. Fully a year and a half after the passage of this law by Congress forbidding entering into contracts with any private concern on the part of the United States.

Col. HULL. Yes, sir.

The CHAIRMAN. So that in your opinion the officers of the Federal Government who entered into that contract with this private corporation exceeded their authority, and the whole thing, in your opinion, is therefore void.

Col. HULL. Yes, sir. The option is nonenforceable by the Alabama Power Co.

The CHAIRMAN. Now, will you kindly state anything else with reference to any of these contracts. Was there a contract with the Air Nitrates Corporation?

Col. HULL. Yes, sir; there is a contract between the Air Nitrates Corporation and the United States of America and the American Cyanamid Co. and the United States of America negotiated by the Ordnance Department, dated June 8, 1918, which is in relation to nitrate plant No. 2.

The CHAIRMAN. That was practically two years after the passage of this law.

Col. HULL. Yes, sir. The opinion of the office was not specifically asked in regard to this contract, but it also has an option of purchase, I believe. Article 19 of this contract reads as follows:

"Sale of plants: If upon cessation of this war, or for other reasons, the United States determines to cease the construction, equipment, or operation of any of the said plants and to dispose of the same, the agent shall be given the first opportunity (for a reasonable period of time not to exceed six months after receipt of written notice stating the determination of the United States to dispose of the same and the material terms upon which such disposition shall be made) to purchase the same upon as favorable terms as the United States is willing to accept therefor, before the United States shall sell the same to any other party."

The same general comment that I made upon the power to grant an option to the Alabama Power Co. applies to this contract.

The CHAIRMAN. Between whom was the Alabama contract made; who were the parties in interest who signed it?

Col. HULL. Between the Alabama Power Co. and the United States of America. The contract was executed by the Ordnance Department, represented by William Williams, an emergency officer.

The CHAIRMAN. Was that Gen. Williams?

Col. HULL. No, sir; that is Gen. C. C. Williams.

The CHAIRMAN. Col. Williams was an emergency officer?

Col. HULL. Lieut. Col. William Williams; yes.

The CHAIRMAN. Who executed the contract on the part of the Alabama Power Co.?

Col. HULL. It was executed by the Alabama Power Co., by James Mitchell, its president.

The CHAIRMAN. How about the other contracts which you have just made reference to.

Col. HULL. The Air Nitrates Corporation contract was executed by parties named at the end. The copy I have does not give the name of its president, but it was prepared to be executed by the president and the secretary of the American Cyanamid Co. and by a colonel of the Ordnance Department of the National Army. At the head it is the Air Nitrates Corporation of the first part and Samuel McRoberts, colonel, Ordnance Department, National Army, the contracting officer, acting on behalf of the Chief of Ordnance of the United States Army.

The CHAIRMAN. Do you know whether or not the contract was duly executed by the respective parties?

Col. HULL. My copy fails to show whether it was formally executed or whether it was proxy signed. I have only a borrowed copy here.

The CHAIRMAN. Could you find that out and state that in the hearings later so that the record may be as nearly complete as we can make it?

Col. HULL. I will be glad to do so.

The CHAIRMAN. I might suggest that you put in the record for the benefit of the hearings the contract in full.

Col. HULL. I will put in the record both contracts.

They are as follows:

[Order No. War—Ord. P 9771—1029 E T 1006—Cont. T—66. Ordnance Department, U. S. Army. Dated and executed June 8, 1918.]

AIR NITRATES CORPORATION AND UNITED STATES OF AMERICA—AMERICAN CYANAMID COMPANY AND UNITED STATES OF AMERICA—CONTRACT FOR ERECTION AND OPERATION OF THREE AMMONIUM NITRATE PLANTS AND LICENSE AGREEMENT IN RELATION THERETO.

This contract, made this 8th day of June, 1918, by and between Air Nitrates Corporation, a corporation organized under the laws of the State of New York (hereinafter called the "agent"), party of the first part, and the United States of America, by Samuel McRoberts, colonel, Ordnance Department, National Army (hereinafter called the "contracting officer"), acting by and under the authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, party of the second part,

Witnesseth:

Whereas a state of war exists between the United States of America and the German and Austro-Hungarian Governments, constituting a national emergency, and the United States requires the performance within the shortest possible time of the work hereinafter described; and

Whereas the American Cyanamid Company, a corporation of the State of Maine, is the producer of certain chemicals by the so-called "cyanamid processes" necessary for the production of ammonium nitrate, and is familiar with and controls exclusive patents and processes for the production of such chemicals in this country, and proposes to assist the United States in performing this contract as follows:

1. By licensing the United States and the said Air Nitrates Corporation as agents of the United States to use its patents and processes.

2. By placing at the disposal of the said Air Nitrates Corporation all its experiences, records, and plans appertaining to the production of the said chemicals.

3. By placing at the disposal of the said Air Nitrates Corporation certain members of its executive and technical force for the construction and operation of the plants hereinafter mentioned.

4. By placing at the disposal of the said Air Nitrates Corporation all its plants for the purpose of training superintendents, foremen, and chief operatives.

And the United States proposes to compensate the American Cyanamid Company for the foregoing as set forth in a contract marked Exhibit 1, bearing even date herewith and annexed hereto; and

Whereas the said company is unwilling to subject its property and assets to liability in connection with the planning, construction, and operation of the proposed plants, and has accordingly organized the Air Nitrates Corporation (the agent under this agreement), which shall act as the agent of and which shall be solely responsible to the United States and others in the planning construction, and operation of the proposed plants, and according to the terms hereof; and

Whereas the United States entered into a contract with the said Air Nitrates Corporation, under date of November 16, 1917, for the construction and operation, as agent for the United States, at Muscle Shoals, Alabama, of a plant for the manufacture of ammonium nitrate, of an approximate capacity of 110,000 short tons of ammonium nitrate per annum, hereinafter referred to as the Muscle Shoals plant, and work thereon has been commenced; and

Whereas it has now became necessary that two additional plants, each with a capacity of approximately 55,000 short tons of ammonium nitrate per annum, shall be constructed and operated at sites to be selected as hereinafter provided; and

Whereas it is desirable that a new contract be entered into for the construction, completion, and operation of all the said plants of an approximate aggregate capacity of 220,000 tons of ammonium nitrate per annum, such new contract to supersede by mutual consent of the parties hereto and in accordance with the best interests of the United States said contract of November 16, 1917:

Now, therefore, in consideration of the mutual agreements herein contained, the said parties have agreed and by these presents do agree with each other as follows:

ARTICLE I.

Exclusive services.—The agent shall engage exclusively in the work of executing this contract, including the designing, constructing, and operating of the plants herein described. It shall use its best endeavors to construct the said plants as quickly as practicable and at the least possible cost consistent with the proper performance of this contract. This shall include availing itself of the cooperation of the American Cyanamid Company to the full extent contemplated in this contract and the one of even date herewith between the United States and the American Cyanamid Company, hereunto attached and marked "Exhibit 1." The agent will maintain such departments as shall be necessary or appropriate for the carrying out of this agreement, including engineering, administrative, purchasing, construction, manufacturing, inspection, labor relations, workmen's compensation, statistical, commissary, police, fire, medical housing, accounting, and legal departments.

ARTICLE II.

Muscle Shoals site.—The agent shall, at the cost of the United States, conclude the negotiations heretofore begun for the acquisition by and in the name of the United States of the site on which said plant at Muscle Shoals is now being constructed.

Selection and purchase of sites for new plants.—The agent, acting as agent for and at the cost of the United States, shall forthwith select two sites, each suitable for the construction and operation thereon of plants of the character hereinafter described for the production of ammonium nitrate. After such sites shall have been severally approved in writing by the contracting officer, they shall be secured at the sole cost of the United States and be conveyed to the United States of America by deeds in form and substance satisfactory to the contracting officer, subject only to such liens and incumbrances as the contracting officer shall approve in writing. The deeds shall be properly executed and acknowledged in form for recording in the counties in which the sites are located.

ARTICLE III.

Plans for and construction of plants.—The agent, acting as agent for and at the cost of the United States, agrees—

1. To proceed with and complete the planning, laying out, constructing, erecting, installing, and equipping of the said plant at Muscle Shoals with an approximate capacity as aforesaid, and to furnish all necessary labor, tools, machinery, and materials, and to do all other things necessary or appropriate thereto. All plans and specifications in relation to said plant heretofore approved by or on behalf of the Chief of Ordnance or the contracting officer shall be considered for the purpose of this agreement as having had the approval of the Chief of Ordnance and the contracting officer.

2. To plan, lay out, construct, erect, install, and equip at each of said two new sites a complete plant, with an approximate capacity as aforesaid, for the production of ammonium nitrate, furnishing all necessary labor, tools, machinery, and materials, and doing all other things necessary and appropriate in the premises.

Each of said plants shall include the necessary land; also necessary lime, carbide, nitrogen gas, lime-nitrogen, ammonia, nitric acid, and nitrating plants; also all necessary temporary buildings, houses for employees, administrative buildings, laboratories, shops, warehouses, hospitals, stores, commissaries, structures, lines of communication and transmission, plant machinery, railway and trolley tracks, dredging, docks, boiler plants, roundhouses, roads, ways, waste disposal and sewerage, water and lighting systems, locomotives, cars, fixtures, tools, equipment, apparatus, and appurtenances; also power houses adequate for the development and transmission of such power for the operation of said plants as can not be advantageously obtained through outside sources or agencies; also gravel pits, limestone quarries, coal mines, and other things, to such extent and in such manner as may be reasonably necessary for the prosecution of the work contemplated by this contract; but no coal mine shall be acquired without the written approval of the contracting officer.

ARTICLE IV.

Operation of plants.—The agent, acting as agent for and at the cost of the the provisions of Article XVII hereof. The agent shall do all things necesciently completed and ready for operation, forthwith to proceed to operate the same and to continue the operation thereof up to June 1, 1921, and thereafter for so long as the United States shall remain in the present war, subject to the provisions of Article XVII hereof. The agent shall do all things necessary or appropriate in and about the operation of said plants, including the procurement of all necessary labor and power and the purchase of all necessary materials.

Operation under this article shall include placing ammonium nitrate produced hereunder, as from time to time directed, on cars or lighters or in warehouses at the site of the plant where manufactured.

Revenue from housing, etc.—Any revenue from the operation of any housing, boarding houses, commissary, stores, infirmary, hospital, or other facilities, or from rebates, refunds, etc., shall be accounted for by the agent to the United States.

ARTICLE V.

Materials.—The United States may at any time furnish the agent any materials necessary for use in the performance of this contract.

ARTICLE VI.

Agent to follow directions.—The agent shall from time to time consult with the contracting officer upon the general character of the work contemplated. Upon written request, made from time to time by the contracting officer, the agent shall inform the contracting officer at the earliest practicable time as to any plan, contract, purchase, and method contemplated in the construction and operation of the plants and properties, and the United States may reject, or from time to time require the agent to modify any such plan, contract, purchase, or method, or to substitute therefor and carry out such other plans, contracts, purchases, or methods as in the judgment of the contracting officer may be in the interest of the United States, all at the expense of the United States. The agent in the planning, constructing, equipping, and operation of the plants shall abide by such directions as the contracting officer shall from time to time give the agent. All such requests and directions shall be in writing or by telegraph, addressed to the agent at its address hereinafter stated.

ARTICLE VII.

Specifications.—The processes and work involved in the manufacture of the final product of ammonium nitrate to be produced hereunder shall be conducted so that said final product may be in accordance with such specifications as the Ordnance Department may from time to time adopt for ammonium nitrate to be manufactured under this contract.

ARTICLE VIII.

Processes.—The said plants shall be constructed for operation under the cyanamid process, unless the United States shall direct that some other process be used, in which case all changes in construction thereby necessitated shall be made by the agent at the cost of the United States.

If at any time hereafter in the judgment of the Chief of Ordnance the oxidation of ammonia and its conversion to dilute nitric acid or the manufacture of ammonium nitrate from dilute nitric acid by interaction with ammonia may be done more advantageously by improved methods or processes of persons or companies other than the agent, the Chief of Ordnance shall be free to call upon the agent to install and use such methods or processes in its operation of the plants, at the cost and expense of the United States. The Chief of Ordnance shall be free to consult with parties other than the agent upon all matters relating to the operation of the plants, to the end that the best results of operation may be obtained.

The agent shall use its best efforts to make contracts with its employees pursuant to which any inventions relating or applicable to the production of carbide, cyanamid, ammonia, and nitric acid or ammonium nitrate made by such employees while in the service of the agent, shall be protected by United States patents, which patents shall become the property of the Air Nitrates Corporation, subject, however, to the condition that it shall grant to the United States at the time of issue of such patent or patents a nonexclusive license without royalty under each and all of them, such license to be restricted to the United States and to the purchasers of any or all of said plants who may receive a license under the provisions of Article X of the agreement of even date herewith between the American Cyanamid Company and the United States. The term "employees" used in this paragraph shall not be deemed to include the persons described in paragraph numbered 3 in Article X hereof.

ARTICLE IX.

Subcontracts.—The agent shall submit to the contracting officer for his written approval, in advance of its execution, any proposed subcontract as to which the contracting officer may direct in writing that his approval be first obtained.

All subcontracts shall contain a reference to this contract and an express provision that they are subject to all provisions hereof and that they may be assigned by the agent to the United States. Upon request in writing a copy of any subcontract shall be delivered to the contracting officer promptly upon the execution thereof.

ARTICLE X.

Costs and expenses—Audit and payment thereof.—The United States shall bear all costs and expenses of every character and description incurred or made in connection with the planning, construction, equipment, and operation of each of the said plants or any part thereof, and in the conduct of any other business or activities of the agent hereunder; and the United States shall supply all money necessary therefor in such amounts and in such manner as to permit all of the agent's activities with respect to the planning, construction, equipment, and operation of the plants to proceed without delays or interruptions and without the necessity of the agent providing any capital or borrowing any moneys. Vouchers for all accounts payable shall from time to time be furnished to the Chief of Ordnance, and upon presentation of satisfactory evidence he shall either furnish the agent funds to the amounts thereof, which funds shall be immediately paid out by the agent under the supervision of a representative of the Chief of Ordnance, or the vouchers may be paid direct by the Chief of Ordnance to the persons entitled to payment thereunder. Such vouchers shall be acted upon by the Chief of Ordnance promptly.

All accounts payable by the United States hereunder, including those in relation to costs and expenses of construction or operation, shall be subject to audit by the United States, which shall maintain at the plants and elsewhere, if necessary, a sufficient number of auditors promptly to audit the same.

To expedite payments to the agent the United States shall detail representatives at each of the said plants and at the agent's home office, with power and sufficient funds to discharge the pay rolls and to make any other payments as they shall become due hereunder. Payments by the United States shall be subject to correction for errors, if any.

The agent shall make no charge to the United States for the following things:

1. For procuring from the American Cyanamid Company a license to it as agent of the United States to use the said company's patents and processes.

2. For procuring from the American Cyanamid Company the disposal, for purposes of the Air Nitrates Corporation, of the said company's experiences, records, and plans appertaining to the production of the said chemicals hereinabove referred to.

3. For procuring from American Cyanamid Company the disposal, for the purposes of the Air Nitrates Corporation, of the following members of the said company's executive and technical force, namely, the president, vice president and general manager, sales and traffic manager, engineering assistant to general manager, superintendent of manufacture, chief technologist, chief engineer, assistant engineer, and in addition thereto, in connection with the operation of the said plants, two principal works managers, as such offices may from time to time be filled.

4. For procuring from the American Cyanamid Company the disposal, for the purposes of the Air Nitrates Corporation, of all of the said company's plants for the purpose of training superintendents, foremen, and chief operatives.

ARTICLE XI.

Agent's compensation.—As full compensation for the services of the agent the United States shall pay to the agent the following fees:

1. *Construction fee.*—Three and one-third (3⅓) per cent of the cost in connection with the construction and equipment of the said plants until such cost (exclusive of the agent's compensation) shall equal thirty million (30,000,000) dollars, and thereafter one and two-thirds (1⅔) per cent of such cost in excess of said thirty million (30,000,000) dollars. Said fee shall be payable monthly upon that portion of the cost for which payment has been made during the month or months preceding and as to which the fee is unpaid. There shall be credited on account of said construction fee any payments for construction compensation heretofore made to the agent under the provisions of said contract of November 16, 1917. The total of the construction fee shall not exceed one million five hundred thousand (1,500,000) dollars.

2. *Operation fee.*—One-quarter of one cent ($0.0025) per pound of ammonium nitrate produced in compliance with Article VII hereof and accepted or utilized by the United States, up to and including 110,000 tons produced in any fiscal year of the United States, and one-eighth of one cent ($0.00125) per pound of

ammonium nitrate so produced and accepted or utilized in any said fiscal year in excess of such 110,000 tons. Payment shall be made monthly.

The Chief of Ordnance may direct the agent to produce at any one or more of said plants products other than ammonium nitrate, and to the extent that such products are not utilized in the making of ammonium nitrate in any of said plants operated by the agent, the agent shall receive as compensation for making such products an operation fee computed upon such a basis as will give the agent for making such products the same amount as the agent, by way of operation fee, would have received (1) where such products are nitrogenous compounds, for fixing an equivalent amount of nitrogen in the form of ammonium nitrate, and (2) where such products are other than nitrogenous compounds, for making ammonium nitrate equivalent in cost to that of such products.

ARTICLE XII.

Basis of cost for construction fee.—The cost upon which the construction fee of the agent is based shall be the entire cost of the construction of the plants herein mentioned, including, amongst other items, those mentioned in Schedule A hereto annexed and made a part hereof. The enumeration of said items shall not be deemed to be inclusive of all items of cost and shall not be construed to exclude in determining cost and the fee thereon other items of expenditure entering into the cost of planning, constructing, and equipping the plants not therein enumerated.

ARTICLE XIII.

Maintenance.—The agent shall, at the expense of the United States, maintain the plants in suitable condition for economical operation, and to this end it shall make all proper repairs. The contracting officer may from time to time specify extraordinary repairs, which shall be made only with his written approval. Should any part of any plant be destroyed wholly or partly by fire or otherwise the Chief of Ordnance shall determine whether such part shall be restored.

ARTICLE XIV.

Title to property.—The title to all property, real or personal, paid for or partly paid for by the United States, shall, immediately upon such payment, or upon coming into the possession of the agent, vest forthwith in the United States.

ARTICLE XV.

Records.—The agent shall keep complete records as to all construction and operation expenses, all of which records shall at all times be open to the inspection of the duly authorized representatives of the United States.

Inspection.—The inspection officers of the Ordnance Department shall at all times have full access to the plants for the purpose of inspecting in every detail all work done, materials used, and ammonium nitrate produced, and becoming familiar with all processes and methods used in the manufacture thereof, and the agent shall afford them all necessary facilities and assistance for performing their duties aforesaid.

ARTICLE XVI.

Loss and damage.—The agent in operating, caring for, and storing property shall use all reasonable effort adequately to protect the same, but this shall not authorize or require the agent to take out or carry insurance for this purpose. The United States shall hold and save harmless the agent from all loss or damage (exclusive of future profits) by accident, fire, flood, explosion, or otherwise arising or growing out of the construction or operation of the said plants and all losses and expenses not compensated by insurance or otherwise.

ARTICLE XVII.

Termination of agreement as to any plant.—In the event that in the opinion of the Chief of Ordnance the public interests so require, this contract may be terminated as to any or all of the plants described herein by notice in writing

to the agent without prejudice to any claim which either of the parties hereto may then have against the other. In the event of the termination of this contract, as aforesaid, the United States shall pay to the agent all costs and discharge all obligations of the agent rising in connection with the construction or operation of the said plant or plants theretofore properly incurred, but not previously paid or discharged, as to which said notice is given. At the option of the United States the agent shall assign or transfer to the United States all contracts outstanding at the date of termination as to any plant previously entered into by the agent hereunder in respect of such plant. In addition thereto the United States shall make the following payments under the following conditions:

(1) In the event that this contract is terminated as aforesaid as to any plant during the construction thereof, if the agent is not in default in any substantial agreement herein contained, the United States shall pay the agent such percentage of the construction fee provided for in Article XI hereof and not theretofore paid as may be found by the Chief of Ordnance as fairly and justly amounting to the percentage of the work then performed, including obligations incurred in respect to said plant, and for which payment has been or will be made.

(2) In the event that this contract is terminated as aforesaid as to any plant during or prior to the operation thereof by the agent, then the agent shall be paid the sum of money, if any, then due on account of the production of ammonium nitrate in said plant, and the United States shall thereafter continue to pay during the period set forth in Article IV hereof to the agent for the ammonium nitrate produced therein one-quarter of one cent ($0.0025) per pound for all ammonium nitrate produced in said plant in any fiscal year of the United States until such date in said year as the amount produced at said plant, together with that produced by the other plants referred to herein, shall equal one hundred and ten thousand (110,000) tons; and as to the amount produced in said plant in said fiscal year, if any there be, after the said one hundred and ten thousand (110,000) tons of ammonium nitrate have been produced as aforesaid, the United States shall pay the agent one-eighth of one cent ($0.00125) per pound. The aggregate payments to the agent under this paragraph (2) on account of plants as to which this contract may have been terminated as aforesaid, shall not exceed five hundred and fifty thousand dollars ($550,000) in any said fiscal year. Wherever the designation ammonium nitrate is used in this paragraph (2), it shall be deemed to include other products, described in paragraph numbered 2 in Article XI hereof, if any there be, produced in the plants described herein, but the fees due on said other products shall be calculated and determined according to the provisions of said paragraph (2) of Article XI hereof.

Provided, however, and it is understood and agreed, that this contract shall not be terminated as to any plant prior to June 1, 1921, or so long as the United States shall remain in the present war, except for the permanent cessation of all activities of the United States in connection with said plant, unless the agent exhibits such default or negligence as respects such plant as to require that the United States in its best interests should directly construct and operate said plant.

In the event of the termination of this contract as to any plant or plants aforesaid, the agent agrees to cooperate with the United States and to give to it its good offices and such assistance as the United States may from time to time request, in making the planning, construction, equipment, and operation of such plants successful and economical in all respects.

ARTICLE XVIII.

Right of United States to discontinue.—Nothing in this contract contained shall be deemed to prevent the United States from at any time discontinuing the construction or operation of any or all of the said plants, and in the event of such discontinuance the United States shall be under no liability to the agent for any payments as respects such plant or plants beyond those in this agreement specified. In the event that construction or operation is resumed at any of said plants at which construction or operation has been discontinued, the provisions of this contract shall govern the rights and obligations of the parties with respect to any such plant to the same effect as though the construction or operation thereof had not been discontinued.

ARTICLE XIX.

Sale of plants.—If upon cessation of this war or for any other reason the United States determines to cease the construction, equipment, or operation of any of the said plants and to dispose of the same, the agent shall be given the first opportunity (for a reasonable period of time, not to exceed six months after receipt of written notice, stating the determination of the United States to dispose of the same, and the material terms upon which such disposition will be made) to purchase the same upon as favorable terms as the United States is willing to accept therefor, before the United States shall sell the same to any other party.

ARTICLE XX.

Bond.—The agent shall furnish to the United States within 20 days after the execution of this agreement a bond in the sum of five hundred thousand ($500,000) dollars, conditioned upon the full and faithful performance by the agent of all terms, covenants, and conditions of that part of this agreement providing for the construction of said plants. The surety on said bond and the form thereof shall be satisfactory to the contracting officer. Unless such bond is furnished within said time limit this agreement may, at the option of the contracting officer, be canceled.

ARTICLE XXI.

Contract nonassignable.—This contract shall not, nor shall any right to receive payment or any other interest therein, be transferred or assigned by the agent to any person, firm, or corporation without the written consent of the Secretary of War.

Disputes.—Except as this contract shall otherwise provide, any doubts or disputes which may arise as to the meaning of anything in this contract shall be referred to the Chief of Ordnance for determination. If, however, the agent shall feel aggrieved at any decision of the Chief of Ordnance upon such reference, he shall have the right to submit the same to the Secretary of War.

Persons not to benefit.—No Member of or Delegate to Congress or Resident Commissioner, nor any person belonging to or employed in the military service of the United States is or shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom, but this article shall not apply to this contract so far as it may be within the operation or exception of section 116 of the act of Congress approved March 4, 1909 (35 Stats., 1109).

Prison labor.—No persons shall be employed in the performance of this contract who are undergoing sentences of imprisonment at hard labor which have been imposed by the courts of the several States, Territories, or municipalities having criminal jurisdiction.

ARTICLE XXII.

Service of notices.—Any notice addressed to the agent at 511 Fifth Avenue, New York, N. Y., or at such other address as the agent shall by notice in writing advise the contracting officer, and either there delivered or deposited in a postpaid wrapper in any post-office box regularly maintained by the United States, shall be deemed to have been served upon the agent. Nothing herein contained shall preclude service of notices upon the agent by delivery thereof to any of its corporate officers in person.

ARTICLE XXIII.

Prior agreement superseded.—This agreement shall supersede the agreement of November 16, 1917, between Air Nitrates Corporation and the United States by which Air Nitrates Corporation is authorized to act as agent of the United States in the construction and operation of the Muscle Shoals plant hereinbefore referred to.

Provided, however, that such supersession shall not affect any of the rights or obligations of the parties hereto which have accrued or become fixed under said agreement of November 16, 1917, prior to the date hereof, except in so far as it is clearly intended by these presents that such rights or obligations shall be affected, whether through extinguishment, the substitution of others therefor, or otherwise.

Provided, also, that such supersession shall not in any way affect any of the subcontracts, obligations, or commitments which the Air Nitrates Corporation has heretofore in good faith entered into, made, or incurred under said agreement of the 16th of November, 1917.

ARTICLE XXIV.

New contract for deficiency in appropriations.—In the event that the existing appropriations applicable to the purposes of this agreement shall be inadequate, the United States shall have the right to execute and deliver, and the agent shall thereupon also execute and deliver, a new contract having the same terms and conditions as are contained herein.

ARTICLE XXV.

Definitions.—Wherever in this contract the words hereinafter enumerated are used they shall mean what is set opposite them:

Agent.—The party of the first part and its duly authorized representatives, successors, and assigns.

Chief of Ordnance.—The Chief of Ordnance, the Acting Chief of Ordnance, or any duly authorized representative of either.

Contracting officer.—The contracting officer executing this contract, his successor or successors, his or their duly authorized agent or agents, and anyone from time to time designated by the Chief of Ordnance to act as contracting officer.

Ton.—Two thousand (2,000) pounds.

Fiscal year of the United States.—The period from July 1st in any year to June 30th in the following year, both dates inclusive.

In witness whereof, the parties hereto have caused these presents to be executed and delivered, in triplicate, at Washington, D. C., the day and year first above written.

AIR NITRATES CORPORATION,
By FRANK S. WASHBURN, *President.*
By A. E. BONN, *Secretary.*
UNITED STATES OF AMERICA,
By SAMUEL MCROBERTS,
Col., Ord. Dept., N. A., Contracting Officer.

Witnesses:
A. G. LOGAN.
C. LAVEGA COHEN.
WILLIAM WILLIAMS.

SCHEDULE A.

ITEMS OF COST REFERRED TO IN ARTICLE XII.

(*a*) All the land, including gravel pits, quarries, and coal mines, labor, material, machinery, fixtures, equipment, apparatus, appurtenances, tools not owned by the workmen, supplies and equipment necessary for either temporary or permanent use for the construction and operation of the plants, including the opening up and operation of gravel pits, quarries, and coal mines.

(*b*) Rental for construction plants and for the main and branch offices, and for furnishings and equipment for such offices.

(*c*) Loading and unloading construction plant, the transportation thereof, including transportation to and from the place or places where it is to be used in connection with said work, the installation and dismantling thereof and ordinary repairs and replacements during its use in the said work.

(*d*) Transportation and expenses, including transportation tax to and from the work of the necessary field and office forces, procuring labor, and expediting the production and transportation of material and equipment. All freight charges on equipment, furnishings, material, and supplies, including transportation tax thereon.

(*e*) Salaries of managers, engineers, superintendents, timekeepers, accountants, clerks, foremen, and other employees at the main and field offices of the agent in connection with said work, salaries of the executive officers of the agent except such as shall be placed at the disposal of the agent by the American Cyanamid Company and set forth in said contract market Exhibit 1.

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(*f*) Buildings, houses, warehouses, hospitals, infirmaries, stores, commissaries, and structures, and the equipment required therefor and furnishings and equipment required for main and field offices, and the cost of maintaining and operating the same, and including such minor expenses as telegrams, telephone service, expressage, postage, etc.

(*g*) Buildings of different grades, warehouses, local power plant, structures, plant machinery, railway and trolley tracks, locomotives, cars, roundhouses, roadways, grading and sewerage, water and lighting systems, and fixtures.

(*h*) All bonds required by this agreement and all bonds necessary or proper, fire, liability, and other insurance, and all losses and expenses not compensated by insurance which have been actually sustained by the agent in connection with said work. Such losses and expenses, when incurred by the agent in connection with damage to third persons resulting from the work or due to the agent's fault or neglect, shall be included in the cost of the work, but not for the purpose of determining the agent's fee; but such losses and expenses when incurred by the agent in connection with constructing and replacing any of the work destroyed or damaged shall be included in the cost of the work for all purposes hereunder.

(*i*) Permit fees, royalties, and other similar items of expense incidental to the execution of this agreement.

(*j*) Transportation, including all transportation tax, traveling and hotel expenses, and telephone, telegraph, mail, and express, expenses of officers, engineers, and other employees of the agent as are actually incurred in connection with this work.

(*k*) Amounts paid to contractors or subcontractors and sums paid by the United States upon contracts made with any person at the request of the agent, and the cost of all materials furnished by the United States.

(*l*) All manner of expense of the agent in creating and constructing the plants and their equipment, including administration, superintendence, engineering, materials, labor, freight, transportation tax, power, heat, light, rentals, insurance, liabilities, losses not covered by insurance, and all overhead, general, and legal cost and expense, and including all other items of expenditure made by the agent not properly chargeable to manufacturing.

(*m*) In addition thereto further allowances, if any there be, of cost as from time to time may be made by the contracting officer.

EXHIBIT I.

LICENSE AGREEMENT.

This agreement entered into this 8th day of June, 1918, between American Cyanamid Company, a corporation organized and existing under and pursuant to the laws of the State of Maine, of the first part, hereinafter called the licensor, and the United States of America, hereinafter called the licensee, by Samuel McRoberts, colonel, Ordnance Department, National Army, hereinafter called the contracting officer, acting by and under the authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, of the second part.

Witnesseth:

Whereas the licensee has entered into an agreement of even date herewith with Air Nitrates Corporation, a corporation organized and existing under and pursuant to the laws of the State of New York, by which agreement said corporation has agreed as agent of the licensee to construct and operate for the licensee plants for the manufacture of ammonium nitrate, all for the reasons and as is more particularly set forth in said agreement; and

Whereas the licensor possesses certain United States letters patent and is the owner of exclusive licenses under certain other letters patent of the United States, all as set forth in Schedule A hereto annexed and made a part hereof, covering certain processes and methods involved in the manufacture of lime nitrogen (calcium cyanamid), its conversion to ammonia gas and the oxidation of ammonia to weak nitric acid, and may grant licenses thereunder; and

Whereas the licensor, to enable said Air Nitrates Corporation to carry out said agreement, will place at the disposal of said corporation its experiences, studies, records, designs, plans, and certain of its executive and technical force, all as hereafter set forth; and

Whereas the licensor entered into a contract with the licensee under date of November 16, 1917, which contract was executed on behalf of the licensee by J. W. Joyes, colonel, Ordnance Department, United States Army, contracting officer, with respect to the license hereinafter granted:

Now, therefore, in consideration of the mutual agreements herein contained, the said parties have agreed, and by these presents do agree, to and with each other as follows, to wit:

ARTICLE I.

License to use certain patented processes, etc.—The licensor, for use and application exclusively by the United States Government of the aforesaid agent at said plants, has given, granted, assigned, and does hereby give, grant, and assign to the licensee the right, license, and privilege to use any and all of the processes, methods, and designs covered by letters patent of the United States and involved in the manufacture of lime nitrogen (calcium cyanamid), its conversion to ammonia gas and the oxidation of the ammonia to weak nitric acid, which said letters patent are described in Schedule A, annexed hereto and made a part hereof, for and during the time the United States shall remain in the present war, and in any event until June 1, 1921, together with all improvements therein and all patents or other rights relating thereto which the licensor may hereafter make or secure during said period.

The licensor agrees that nothing contained in this agreement shall restrict the licensee to the use only of such rights and patents, as the licensor now possesses or may hereafter possess, and the licensee has the privilege of using the processes, rights, and patents of persons other than the licensor, either in conjunction with the processes, rights, and patents of the licensor or independent thereof if in the judgment of the contracting officer such action is required to obtain the best results of operation.

ARTICLE II.

Use of licensor's experiences, records, etc.—The licensor agrees to place at the disposal of the said Air Nitrates Corporation and the contracting officer, for the production of ammonium nitrate and the construction and operation of the plants referred to in the agreement between the licensee and the Air Nitrates Corporation above referred to, all the experiences, records, studies, designs, and plans of the licensor bearing on and pertaining to the processes necessary or incidental to the manufacture of ammonium nitrate now owned by the licensor and agrees that the said Air Nitrates Corporation and its representatives and the contracting officer shall have access to said experiences, records, studies, designs, and plans at all reasonable hours, and shall be permitted to make copies thereof and excerpts therefrom. The licensor further agrees to divulge to the said Air Nitrates Corporation and the contracting officer for the sole purpose of this agreement and said agreement between Air Nitrates Corporation and said licensee, all of the secret processes which, combined with the processes covered by the aforesaid letters patent, go to make up the system of manufacture of ammonium nitrate.

ARTICLE III.

Use of licensor's plants for training purposes.—The licensor agrees to place at the disposal of the said Air Nitrates Corporation and the contracting officer all of the plants now owned or operated by the licensor for the purpose of training of superintendents, foremen, chief operatives, and the like for the proposed plants to be constructed and operated by the Air Nitrates Corporation, and further agrees that the said corporation and its representatives and the contracting officer shall have access to said plants at all reasonable hours for the purpose above referred to.

ARTICLE IV.

Services of certain of licensor's technical men.—The licensor agrees to place at the disposal of the said Air Nitrates Corporation for the construction and operation of the plants under the contract above referred to the following members of the executive and technical forces of the licensor as from time to time constituted, namely, president, vice president and general manager, engineering assistant to general manager, superintendent of manufacturing, sales and traffic manager, chief technologist, chief engineer, assistant engineer, and, in addition

thereto, in connection with the operation of said plants, two principal works managers; and further agrees to pay the entire salaries of such persons during the terms of said agreement between the licensee and said corporation, and agrees that at all times it will maintain an executive and technical force which shall be familiar with the operation of the processes involved in the manufacture of ammonium nitrate.

ARTICLE V.

Benefit hereunder to accrue to Air Nitrates Corporation.—The licensor agrees that all of the benefits to accrue to the licensee by the terms of this agreement may be at any time assigned to the Air Nitrates Corporation and shall in any event accrue to the Air Nitrates Corporation, but only for the purposes of said agreement between the United States and the Air Nitrates Corporation. The licensor shall have the right to grant, and at the written request of the licensee will grant, a license in all respects similar to the license herein granted to the Air Nitrates Corporation to enable said corporation to carry out its agreement with the United States of even date herewith.

ARTICLE VI.

Royalty.—In consideration of the granting of the license provided for in Article I hereof and of the other conditions to be performed by the licensor, the licensee agrees to pay the licensor during the term thereof specified in said article, as royalty, an amount equivalent to six mills ($0.006) per pound of all nitrogen fixed as lime nitrogen manufactured at the plants hereinbefore described in the contract of even date herewith between the United States and the Air Nitrates Corporation, and to which reference has hereinbefore been made, up to and including the first ninety-one million seven hundred thousand (91,700,000) pounds of such nitrogen so fixed in any fiscal year of the United States, and in addition thereto three mills ($0.003) per pound of all nitrogen fixed as lime nitrogen in any said fiscal year in excess of the said ninety-one million seven hundred thousand (91,700,000) pounds of nitrogen, it being further understood and agreed that no part of such royalty shall directly or indirectly inure to the benefit of an alien enemy of the United States except as may appear upon a disclosure of stock lists made pursuant to law. Payment for royalties shall be made each month as early in the month as practicable upon the presentation of satisfactory evidence showing the production during the preceding month of nitrogen fixed as lime nitrogen at the plants hereinbefore referred to.

ARTICLE VII.

Acknowledgment of ownership of patents, processes, etc.—It is understood and agreed that so far as the right, license, and privilege to use any and all of the patents, processes, methods, and designs, as described in Schedule A hereto annexed, is given, granted, and assigned hereby, the Government and its agents and other parties claiming under this license, do and they shall acknowledge and recognize the American Cyanamid Company as the sole owner of said patents, processes, methods, and designs and of the exclusive right to use the same, subject only to the rights granted to the United States by this license and any license granted said Air Nitrates Corporation, and the United States shall, so far as practicable, exclude the public from all works in which said process shall be employed, and generally shall use all reasonable means to preserve said rights unimpaired.

ARTICLE VIII.

Indemnity against infringement.—To the extent only that the licensor shall have received cash hereunder the licensor agrees to defend and save harmless the Air Nitrates Corporation and the United States from all suits and claims for infringement by reason of the use by either of them of its patents for the making of cyanamid and the making of ammonia gas, which said patents are described in Schedule B hereto annexed and made a part hereof, and pay any judgments which may be obtained therefor against the licensee or the said Air Nitrates Corporation, but only to the extent aforesaid.

The licensor will defend and save harmless the licensee and the Air Nitrates Corporation from any action or suit brought by any person in privity with it

in which the right of said licensee or said corporation to use said patents described in said Schedule A shall be attacked: *Provided, however,* That the United States shall promptly give the licensor written notice of any and all such suits, actions, or claims described in this article, and tender the defense thereof to the licensor.

ARTICLE IX.

Termination of agreement as to any plant.—In the event that the United States shall terminate this agreement as to any one or more of the plants to be constructed by the Air Nitrates Corporation under said agreement of even date herewith and pursuant to the provisions in that behalf therein contained, all of the rights and privileges herein inuring to the said Aid Nitrates Corporation shall inure in respect of the plant or plants as to which said agreement is terminated, to the benefit of the United States, but only until June 1, 1921, and so long thereafter as the United States shall remain in the present war.

ARTICLE X.

License to use patents, processes, etc., after 1921 or the end of the war; arbitration of royalties thereunder.—The licensor hereby gives and grants to the licensee, in addition, for use and application exclusively by the licensee in the operation of the aforesaid plants, the right, license, and privileges to use any and all of the patents, processes, methods, and designs embraced in the license hereinbefore granted to the licensee by Article I hereof, from and after the 1st day of June, 1921, or the date upon which the United States shall cease to be in the present war (whichever date shall last occur) and until the expiration of the United States patents covering the same, upon the following terms, to wit:

The licensee shall pay monthly to the licensor for such additional license under this article a royalty, unless and until changed by the arbitration hereinafter provided, of one and one-half cents ($0.015) per pound of nitrogen content in any and all products manufactured by the licensee at each and every of said plants under and by the use of any of the patents, processes, methods, or designs embraced in the said additional license.

In the event that either the licensor or the licensee shall be dissatisfied with the aforesaid royalty in this article defined, either or both may, within the first three years of the period fixed for the duration of said additional license, demand that the amount of the royalty to be paid hereunder shall be determined and fixed by arbitration. Such demand shall be made in writing and shall be delivered to the other party hereto, together with the name and address of the arbitrator chosen by the party demanding the arbitration, and the other party hereto shall, within fifteen (15) days thereafter, choose a second arbitrator and notify the party demanding the arbitration of its choice and give the name and address of such arbitrator. The two arbitrators so chosen shall, within fifteen (15) days after being notified by either party that the second arbitrator has been chosen, choose a third arbitrator. The arbitrators, when chosen, shall promptly fix a time and place for the hearing, and then and there the parties hereto shall attend and present their respective proofts and arguments. The hearing may from time to time be adjourned by the arbitrators by a writing notifying the parties of the time and place to which such adjournment is made.

The arbitrators shall with all reasonable speed ascertain and determine what, in their opinion, under all the circumstances, are adequate and reasonable royalties to be paid under this article and the date, not earlier than that of the demand for such arbitration, from which the said award shall be effective. They shall notify the parties in writing of the royalties so ascertained and determined and state the amount, if any, that either party may then owe to the other with respect to royalties under the terms of the award. The said award when signed by any two of the arbitrators shall be final and conclusive upon all parties concerned.

In the event that either the second or the third arbitrator shall not be chosen in the manner and within the time hereinabove fixed, any United States district judge for the southern district of the State of New York, upon the application of either party, may choose an arbitrator or arbitrators, as the case may be, to act.

No terms with respect to royalty contained in this agreement or in the said agreement of November 16, 1917, or in any agreement between said Air Nitrates Corporation and the United States, or in any negotiations or proposals between

the said several parties looking to the making of the said agreements or relating to the subject matter thereof shall be utilized by either party in said arbitration or taken into consideration by the arbitrators in making their award.

The costs and expenses of the arbitrators and of the arbitration shall be ascertained by the arbitrators and shall be borne equally by the parties hereto.

The licensee may transfer to the purchaser of any one or more of said plants the right to avail itself of the license in this article granted in the operation of the plant or plants so purchased, if said purchaser, as a term of said purchase, expressly covenants to undertake, observe, and perform all the terms of this article, including the payment of royalties and the findings of the said arbitrators, if any, as respects the plant or plants so purchased.

ARTICLE XI.

Cessation of royalties.—If the use of the inventions of the aforesaid letters parent and the methods, apparatus, and processes owned by the licensor and disclosed hereunder to the Air Nitrates Corporation and the licensee shall be discontinued by the Air Nitrates Corporation or by the licensee or its assigns, the obligation for the payment of royalties hereunder shall cease as to those of said parties who shall have so discontinued such use.

ARTICLE XII.

Contract not assignable.—This contract shall not, nor shall any right to receive payment, or any other interest herein, be transferred or assigned by the licensor to any persons, firms, or corporations.

ARTICLE XIII.

Persons not to benefit.—No Member of or Delegate to Congress, or Resident Commissioner, is, or shall be, admitted to any share or part of this contract or to any benefit that may arise therefrom, but this article shall not apply to this contract so far as it may be within the operation or exception of section 116 of the act of Congress approved March 4, 1909 (35 Stat., 1109).

ARTICLE XIV.

Disputes.—Except as this contract shall otherwise provide, any doubts or disputes which may arise as to the meaning of anything in this contract shall be referred to the Chief of Ordnance for determination. If, however, the licensor shall feel aggrieved at any decision of the Chief of Ordnance upon such reference, he shall have the right to submit the same to the Secretary of War.

ARTICLE XV.

Definitions.—Whenever in this contract the words hereinafter enumerated are used they shall mean what is set opposite them.

Licensor.—The party of the first part and its legal representatives, successors, and assigns.

Chief of Ordnance.—The Chief of Ordnance, the Acting Chief of Ordnance, or any duly authorized representative of either.

Contracting officer.—The contracting officer executing this contract, his successor or successors, his or their duly authorized agent or agents, and anyone from time to time designated by the Chief of Ordnance to act as contracting officer.

ARTICLE XVI.

New contract for deficiency in appropriations.—This agreement shall be binding upon the licensor for the term of the license, but in the event of the existing appropriations applicable to the purposes of this contract being inadequate, the licensee shall have the right to execute and deliver, and the licensor shall thereupon also execute and deliver, a new contract having the same terms and conditions as are contained herein.

ARTICLE XVII.

Previous agreement superseded.—This agreement shall supersede the said agreement of November 16, 1917, between the licensor and the licensee.

In witness whereof, the parties hereto have caused this contract to be executed in triplicate, at Washington, D. C., the day and year first above written.

AMERICAN CYANAMID COMPANY,
Licensor.
By FRANK S. WASHBURN *President.*
By C. M. GRANT, *Secretary.*

UNITED STATES OF AMERICA,
By SAMUEL MCROBERTS,
Colonel, Ordnance Dept., N. A., Contracting Officer.

Attest:
Witnesses:
M. G. LOGAN.
E. J. PRANKE.
WILLIAM WILLIAMS.

SCHEDULE A.

[Being a part of license agreement hereto annexed.]

LIST OF PATENTS COVERING PROCESSES AND PRODUCTS OF THE PROPOSED GOVERNMENT NITRATE PLANTS.

U. S. patent 776314. "Process of making ammonia," November 29, 1904.
U. S. patent 785161. "Process of making nitrogen compounds," March 21, 1905.
U. S. patent 12762. "Process of making nitrogen compounds," March 10, 1908.
U. S. patent 996011. "Method of making nitrogen compounds," June 20, 1911.
U. S. patent 999071. "Apparatus for producing calcium cyanamid," July 25, 1911.
U. S. patent 1009705. "Process of making calcium cyanamid," November 21, 1911.
U. S. patent 987674. "Process of producing nitrogen compounds," March 21, 1911.
U. S. patent 1006927. "Method of producing nitrogen compounds from carbids," October 24, 1911.
U. S. patent 1010404. "Apparatus for producing nitrogen compounds from carbids," November 28, 1911.
U. S. patent 1100582. "Process of crushing and grinding calcium carbid," June 16, 1914.
U. S. patent 1100539. "Cyclical process of fixing atmospheric nitrogen," June 16, 1914.
U. S. patent 1103060. "Method and means for fixing nitrogen," July 14, 1914.
U. S. patent 1103061. "Process and apparatus of fixing atmospheric nitrogen," July 14, 1914.
U. S. patent 1103062. "Method of and apparatus for fixing nitrogen," July 14, 1914.
U. S. patent 1149653. "Process of making ammonia from calcium cyanamid," August 10, 1915.
U. S. patent 1183885. "Apparatus for producing ammonia," May 23, 1916.
U. S. patent 1154640. "Process of producing ammonia," September 28, 1915.
U. S. patent 1163095. "Process of making ammonia from calcium cyanamid," December 7, 1915.
U. S. patent 1193796. "Method of oxidizing ammonia," August 8, 1916.
U. S. patent 1193797. "Process of and apparatus for oxidizing ammonia," August 8, 1916.
U. S. patent 1193798. "Catalyzer apparatus for oxidizing ammonia," August 8, 1916.
U. S. patent 1193799. "Platinum catalyzer," August 8, 1916.
U. S. patent 1193800. "Catalyzer for oxidizing ammonia," August 8, 1916.
U. S. patent 1206062. "Process of making nitric acid and other products," November 28, 1916.
U. S. patent 1206063. "Process of making nitric acid and other products," November 28, 1916.
U. S. patent 1217247. "Process of making ammonia nitrate and other products," February 27, 1917.
U. S. patent 1242953. "Process for producing nitrose gases," October 16, 1917.

SCHEDULE B.

[Being a part of license agreement hereto annexed.]

U. S. patent 776314. "Process of making ammonia." November 29, 1904.
U. S. patent 785161. "Process of making nitrogen compounds," March 21, 1905.
U. S. reissue 12762. "Process of making nitrogen compounds." March 10, 1908.
U. S. patent 987674. "Process of producing nitrogen compounds," March 21, 1911.
U. S. patent 996011. "Method of making nitrogen compounds," June 20, 1911.
U. S. patent 999071. "Apparatus for producing calcium cyanamid," July 25, 1911.
U. S. patent 1009705. "Process of making calcium cyanamid." November 21, 1911.
U. S. patent 1006927. "Method of producing nitrogen compounds from carbids." October 24, 1911.
U. S. patent 1010404. "Apparatus for producing nitrogen compounds from carbids." November 28, 1911.
U. S. patent 1100539. "Cyclical process of fixing atmospheric nitrogen," June 16, 1914.
U. S. patent 1100582. "Process of crushing and grinding calcium carbid." June 16, 1914.
U. S. patent 1103060. "Method and means for fixing nitrogen." July 14, 1914.
U. S. patent 1103061. "Process and apparatus for fixing atmospheric nitrogen," July 14, 1914.
U. S. patent 1103062. "Method of and apparatus for fixing nitrogen," July 14, 1914.
U. S. patent 1149653. "Process of making ammonia from calcium cyanamid." August 10, 1915.
U. S. patent 1154640. "Process of producing ammonia." September 28, 1915.
U. S. patent 1163095. "Process of making ammonia from calcium cyanamid." December 7, 1915.
U. S. patent 1183885. "Apparatus for producing ammonia." May 23, 1916.

COPY OF CONTRACT NO. T-69, ARMY NO. 12835, DATED DECEMBER 1, 1917, BETWEEN THE UNITED STATES AND ALABAMA POWER CO. FOR CONSTRUCTION OF GENERATING STATION, SUBSTATIONS, AND TRANSMISSION LINES, AND FOR SUPPLY OF ELECTRICAL ENERGY TO UNITED STATES NITRATE PLANTS AT MUSCLE SHOALS AND SHEFFIELD, ALA.

[Office of the Chief of Ordnance, Nitrate Division, Washington, D. C.]

This agreement, dated December 1, 1917, between Alabama Power Co., a corporation organized and existing under the laws of the State of Alabama (hereinafter called the "contractor"), party of the first part, and the United States of America, by William Williams, lieutenant colonel, Ordnance Department, United States Army, acting as contracting officer by authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, party of the second part, witnesseth:

Whereas the United States is constructing at or near Sheffield, Alabama, certain plants for the production of ammonium nitrate and other chemicals and will require electric energy for their operation and for other purposes; and

Whereas the contractor owns and operates an electric generating transmitting and distributing system in the State of Alabama which includes in general (1) a hydroelectric plant on the Coosa River with an installed capacity of 67,500 K. V. A.; (2) a transmission network (including a 110,000-volt system) connecting the aforesaid plant with various other plants and substations; (3) a steam reserve generating plant, hereinafter referred to as the Warrior Station, situated on the Black Warrior River at the junction of said river with Bakers Creek, Walker County, and having an installed capacity of 25,000 K. V. A.; (4) certain rights of way extending approximately twenty miles from said Warrior Station toward Sheffield, Ala., and available for the construction thereon of a portion of the transmission line hereinafter referred to; and

Whereas the contractor represents that it now owns and controls at said Warrior Station things and facilities which will be useful in connection with the installation, construction, and operation of the Warrior extension and Warrior substation hereinafter referred to, including (*a*) adequate circulating water intake and discharge facilities with gates, screens, canals, and tunnels; (*b*) partially constructed building and apparatus foundations; (*c*) camps, roads, tracks, and docks; (*d*) plans and specifications; (*e*) a staff for engineering, construction and operation; (*f*) ash-handling facilities and ash-dumping spaces; and (*g*) other facilities in existence at or about said station at the commencement of work under this contract which will be useful in the maintenance and operation of said Warrior extension as a plant for the generation of electric energy; and

Whereas the existing state of war creates a national emergency and the United States requires the performance of the work and the supply of electric energy herein described at the earliest date possible:

Now, therefore, in consideration of the mutual agreements herein contained, the said parties have agreed and by these presents do agree with each other as follows:

ARTICLE I.

Tie line from contractor's system to Warrior substation.—The contractor shall at its own cost and expense furnish the labor, materials, tools, machinery, equipment, facilities, and supplies and do all things necessary for installing between its said 110,000-volt system and the Warrior substation mentioned in Article II hereof, a tie line and other facilities of capacity and character sufficient for transmitting continuously 30,000 K. W. of 3-phase, 60-cycle, alternating current at 110,000 volts, to said Warrior substation and through it to the transmission lines referred to in Article III.

ARTICLE II.

New facilities at Warrior Station.—The contractor shall, at the expense of the United States, prepare and submit to the contracting officer for approval, general plans and specifications for additional plant and other facilities at or near its Warrior Station as follows:

(*a*) *Warrior extension.*—For a new power station building with a 33,333 K. V. A. steam turbo generator with boilers and switchboard and for other facilities as more fully described in schedule A hereto annexed and made a part hereof. The aggregate of the new facilities to be erected or installed under this subdivision, including all movable property thereto pertaining, are hereinafter referred to as the "Warrior extension."

(*b*) *Warrior substation.*—For a new substation and substation apparatus, as more fully described in schedule B hereto annexed and made a part hereof. The aggregate of all new facilities to be erected or installed under this subdivision, including all movable property thereto pertaining, are hereinafter referred to as the "Warrior substation."

Upon the approval by the contracting officer of said plans and specifications for the Warrior extension and the Warrior substation or any part thereof the contractor shall as the agent for and at the expense of the United States furnish labor, materials, tools, machinery, equipment, facilities, and supplies, and do all things necessary for the construction and completion of all buildings and structures for the installation of all equipment and for the performance of all other work described in the plans and specifications so approved, as they may be amplified by detailed plans and specifications submitted to and approved by the local representative of the contracting officer.

ARTICLE III.

Transmission lines.—(1) The contractor shall, subject to the approval of the contracting officer, but at the sole expense of the contractor, select, survey, and acquire the title to the necessary right of way of approximately one hundred feet width to provide, in conjunction with its said present right of way of approximately twenty miles length and one hundred feet width, a continuous and reasonably direct right of way for a transmission line from said Warrior substation to a point (to be designated by the Chief of Ordnance) on the land of the United States on which is located its Muscle Shoals nitrate plant and substation.

(2) The contractor shall, at the expense of the United States, prepare and submit to the contracting officer for approval general plans and specifications

for a transmission line of the general character described in Schedule C hereto annexed and made a part hereof, extending from said Warrior substantion over said right of way to said land of the United States, thence over said land, as determined by the contracting officer, to the Muscle Shoals substation referred to in Article IV. Upon the approval by the contracting officer of said plans and specifications or any part thereof, the contractor shall as the agent for and at the expense of the United States furnish all the labor, materials, tools, machinery, equipment, facilities, and supplies, and do all things necessary to clear so much of said right of way and so much of the land of the United States along the line which may be indicated by the contracting officer as may be necessary and to construct thereon a transmission line and appurtenances in accordance with the plans and specifications so approved, as they may be amplified by detailed plans and specifications submitted by the contractor to and approved by the local representative of the contracting officer. Such transmission line and appurtenances are hereinafter referred to as the transmission line.

(3) The contractor shall, at the expense of the United States, prepare and submit to the contracting officer for approval general plans and specifications for a branch transmission line of the general character of the transmission line, extending from a point on the transmission line at or near Russellville to the limestone quarry of the United States, a distance of approximately 3,000 feet. Such branch transmission line and appurtenances are hereinafter referred to as the quarry branch line. Upon the approval by the contracting officer of such plans and specifications the contractor shall as the agent for and at the expense of the United States likewise construct the quarry branch line on a right of way to be provided by and at the expense of the United States.

(4) The contractor shall, until the termination of the war, on written request by the contracting officer, construct at the expense of the United States any other branch transmission lines required by the United States in connection with the operation of said nitrate plants, on a right of way to be provided by and at the expense of the United States. The United States shall pay the contractor as compensation for its services under this subdivsion such fee as may be allowed by the contracting officer.

(5) The contractor may construct, operate, and maintain only such other transmission lines and appurtenances on its said right of way as in the opinion of the Chief of Ordnance will not in any way interfere with the construction and operation by the United States of the transmission line or of an additional 110,000 volt transmission line and appurtenances, if the United States desires to construct such, paralleling the transmission line. The contractor shall not use the poles or wires erected nor the way cleared at the expense of the United States without the written authority of the Chief of Ordnance.

ARTICLE IV.

Muscle Shoals substation.—The contractor shall, at the expense of the United States, prepare and submit to the contracting officer for approval, general plans and specifications for a substation and substation apparatus at Muscle Shoals, as described in Schedule D hereto annexed and made a part hereof. Said substation and substation apparatus are hereinafter referred to as the "Muscle Shoals substation."

Upon the approval by the contracting officer of said plans and specifications or any part thereof, the contractor shall, as the agent for and at the expense of the United States, furnish all labor, materials, tools, machinery, equipment, facilities, and supplies and do all things necessary for the construction of all buildings and structures, for the installation of all equipment and for the performance of all other work described in the plans and specifications so approved, and as amplified by plans and specifications submitted by the contractor to and approved by the local representative of the contracting officer.

ARTICLE IVA.

Drifton extension railroad.—The contractor shall prepare and submit to the contracting officer for approval general plans and specifications for the extension of the Drifton branch of the Southern Railway from the terminus of said branch to the Warrior extension, a distance of 8,000 feet, more or less. Upon the approval by the contracting officer of said plans and specifications or any part thereof, the contractor shall furnish all the labor, materials, tools, machinery, equipment, facilities, and supplies, and do all things necessary for the construction of said Drifton extension railroad, and of all other work described in the plans and specifications so approved, and as amplified by plans and specifications submitted by the contractor to and approved by the local representative of the contracting officer. The construction, operation, and maintenance of said Drifton extension railroad shall be on the terms and conditions set forth in Schedule E hereto annexed and made a part hereof. The parties hereto shall, without unnecessary delay, execute a supplemental contract in relation to the subject matter of this article, which shall embody such further details and contain such reasonable clauses as the contracting officer shall deem necessary.

ARTICLE V.

Changes in drawings and specifications.—The contracting officer may, from time to time, by written instructions, make changes in the drawings and specifications prepared by the contractor and require additional work or direct the omission of work previously ordered, and the provisions of this contract shall apply to all such changes, modifications, and additions with the same effect as if they were embodied in the original drawings and specifications; but the contractor shall not be held responsible for delays resulting from such changes or delays in giving approvals. Changes, modifications, and additions affecting the contractor's property or system to be mutually agreeable; provided that the submission by the contractor for approval and the approval by the contracting officer of any such change, modification, or addition shall be evidence of such agreement.

ARTICLE VI.

Subcontracts.—The contractor may, with the written approval of the contracting officer, perform any part of the construction and equipment work under this contract through the means of subcontracts, but such subcontracts shall contain a reference to this contract and an express provision that they are subject to all provisions hereof, and that with the consent of the United States they may be assigned by the contractor herein to the United States or its nominee. Nothing in this article contained, nor the approval of said subcontracts, shall relieve the contractor of any of its obligations hereunder. A copy of every subcontract shall be delivered to the contracting officer promptly upon the execution thereof.

ARTICLE VII.

Use by United States of contractor's lands.—(1) The contractor agrees during such period as the United States shall remain the owner of said Warrior extension and substation and until their acquisition by the contractor or their removal by the United States (*a*) that the United States shall have the right to occupy for the purposes of this contract all parcels of land upon which any building or structure of whatever nature (including lines, pipes, poles, apparatus, or connections), may or shall be erected under this contract for or at the expense of the United States in connection with the Warrior extension or Warrior substation; (*b*) that the United States shall have rights of ingress and egress for the purpose of this contract to and from all such parcels of land and from one to the other with the right to make all necessary connections across any of such lands, to lay, relay, maintain, and repair conduits and pipes and to erect poles, and in general to do all acts and things necessary to enable the United States to make the most convenient use of such buildings, structures, machinery, intake and discharge facilities and connections in carrying out this contract; in such manner, however, as not to interfere with the operation of the contractor's Warrior station without its previous consent.

(2) The contractor also agrees that the United States may erect and maintain transmission lines on the contractor's said right of way from the Warrior extension to the land of the United States on which is located its said Muscle Shoals nitrate plant during such period as the United States shall remain the owner of the transmission line.

Nothing in this article contained, however, shall prevent the contractor from utilizing in such manner as it may desire any of its lands not occupied by the United States on December 1, 1918, subject, however, to the provisions of subdivision (5) of Article III.

ARTICLE VIII.

Maintenance of Warrior extension, substations, and the transmission line—Insurance.—The contractor shall at its own expense, upon the termination of the period of preliminary operation mentioned in Article XIV and during the period described in the first paragraph of Article VII, maintain the Warrior extension and the Warrior substation, including all equipment and appurtenances, in first-class repair and suitable condition for efficient and continuous operation.

The contractor shall at its own expense, upon the termination of said period of preliminary operation and during the period described in the second paragraph of Article VII hereof, maintain the transmission line and the quarry branch line in good repair and suitable condition for efficient and continuous operation. The contractor shall upon written request by the contracting officer cause the Warrior extension, said substations, and said transmission lines to be duly policed, but at the expense of the United States. Upon failure of the contractor after reasonable notice from the contracting officer to maintain said properties in repair as hereinabove provided, the United States shall make such repairs and charge the cost thereof to the contractor.

The contractor shall, upon the termination of said period of preliminary operation, insure and keep insured all of said property of a character which it is customary to insure, against loss or damage by fire and any other casualty customarily covered by insurance; loss or damage to be payable to the United States as its interest may appear; all policies to be subject to the approval of the contracting officer. The cost of such insurance shall be borne by the contractor. In the event of damage to or the destruction of said Warrior extension or Warrior substation from whatever cause after the contractor begins to operate the same as a part of its system the contractor shall, at its own expense, promptly replace the property so damaged or destroyed. Insurance collected in respect of such damage or loss may be paid to the contractor, as the work of reconstruction progesses, in such amounts as the contracting officer deems proper. If any right of action or claim exists in favor of the United States as the beneficiary of such insurance or as the purchaser of any damaged or destroyed apparatus or property connected with said Warrior extension or Warrior substation, the contractor shall be entitled to the benefit of such right or claim for the purpose of reimbursing or protecting it in replacing property so damaged or destroyed; and the United States agrees either to assign such right or claim to the contractor or to pursue the same for the benefit of the contractor.

During the construction of the Warrior extension, the Warrior substation, and the transmission line, and until the contractor shall have commenced operation of the same as part of its system (but not thereafter) the United States shall bear all losses or accidents to person or property occurring in the course of the work.

ARTICLE IX.

Title to property paid for by United States.—The title to all property purchased, acquired, erected, or installed at the expense or for the account of the United States, including the Warrior extension, Warrior substation, Muscle Shoals substation, the transmission line, and the quarry branch line shall forthwith upon such purchase, acquisition, erection, or installment vest in the United States. All property of the United States shall, so far as practicable, be kept separate and apart from property belonging to the contractor and the contractor shall acquire no property right or interest therein. Such property shall at all times be considered personalty, which shall not be deemed to be so affixed to the real estate as to become a part thereof. It shall be plainly marked to denote ownership as the contracting officer may direct.

The contractor agrees to protect and save harmless the United States from any and all claims that may be made by or on behalf of any mortgagee, trustee, bondholder, or lienor to any building, structure, machinery, equipment, or other property of the United States that may, under the provisions of this contract, be placed upon any of the contractor's land which now is or hereafter shall be subject to a mortgage, lien, or deed of trust, including the first mortgage of the Alabama Power Co., dated March 1, 1916.

ARTICLE X.

Schedule of United States property.—(1) As soon as practicable a schedule of the property belonging to the United States under this contract shall be made in duplicate by the contractor and approved and identified by the parties hereto.

As additional property is acquired, at the expense of the United States, for use in connection with the Warrior extension, the Warrior substation, the Muscle Shoals substation, the transmission line, or the quarry branch line, a like schedule thereof shall be made, approved, and identified as aforesaid; and all property so acquired shall become a part of the Warrior extension, the Warrior substation, the Muscle Shoals substation, the transmission line, or the quarry branch line, as the case may be.

(2) In said schedule there shall be indicated the articles or apparatus and the value thereof which have been installed to replace those existing in the property of the contractor where such replacement was necessary to adapt the apparatus or system of the contractor to the requirements or apparatus of the United States.

ARTICLE XI.

Cost payable by United States.—The cost of the work mentioned in Article II, in subdivisions (2) and (3) of Article III, and in Article IV shall, upon approval or ratification of such cost by the contracting officer, be borne and paid by the United States. Included in the items of such costs are those listed in Schedule F hereto annexed and made a part hereof. The United States shall pay such cost in the manner following:

(*a*) It shall pay directly to laborers and and material men all labor, materials, and supplies, the cost of which has been so approved or ratified, also all rent due the contractor under Schedule F in respect of any construction plant or office space of the contractor.

(*b*) It reserves the right to pay directly to common carriers any or all freight and express charges on materials, supplies, or machinery certified by the contracting officer as being for use under this contract.

(*c*) It shall reimburse the contractor for all costs and expenditures incurred and paid by the contractor upon the same being approved or ratified by the contracting officer.

The United States shall detail a sufficient number of disbursing officers for service on the work with power and funds to make prompt payment of all sums due upon this article.

ARTICLE XII.

Compensation by United States for use of contractor's lands and other facilities, and in lieu of overhead.—Upon the signing and delivery of this contract the United States shall pay to the contractor the sum of sixty thousand (60,000) dollars in full satisfaction (*a*) for all uses of contractor's lands mentioned in Article VII and for the use of the facilities owned or controlled by the contractor and referred to in the recitals to this contract; (*b*) for overhead expenses of the contractor.

ARTICLE XIII.

Contractor's fee.—As full compensation for the services of the contractor in all work of construction and equipment to be performed hereunder, including the work mentioned in Schedules A, B, C, and D, the United States shall pay to the contractor a fee equal to six per cent of the cost described in Article XI, except that no fee shall be paid in respect of the following:

(*a*) Plant or equipment furnished by the United States.

(*b*) Freight and express charges, other than charges for transportation of the contractor's construction plant, equipment for construction, and tools.

(*c*) Premiums on bonds, losses and expenses mentioned in subdivision (*h*) of Schedule F.

(*d*) Cost of reconstructing or replacing any damaged work, unless the fee thereon shall be authorized by the contracting officer under subdivision (*k*) of Schedule F.

The amount of said fee shall be computed by the contracting officer, and payments shall be made monthly, based upon the cost of disbursements of the preceding month. In determining said fee the payments by the United States described in Article XII shall not be included as a part of the cost of any of the work. The total of said fee shall not exceed two hundred and twenty-five thousand (225,000) dollars.

ARTICLE XIV.

Period of preliminary operation.—From such time as the Warrior extension, the Warrior substation, and the transmission line are, in the opinion of the contracting officer, ready for preliminary operation and until December 1, 1918,

or until such later date as the same are deemed by the Chief of Ordnance as complete and ready for use in the performance of this contract, the contractor shall operate the said properties at the expense of the United States, such expense to include all labor, coal, material, and supplies which may be used in the testing or operation of said properties, and also a fair proportion of the expense of the contractor's regular operating staff engaged in said work. Such expense shall be paid to the contractor monthly, but shall not be included in the cost of such properties for the purpose of determining their value.

During the period of preliminary operation all energy developed by the Warrior extension shall, to the extent that the United States shall require, be delivered to the transmission line and no charge shall be made therefor by the contractor. The equivalent of any energy generated during such period at the Warrior extension and used by the contractor for commercial purposes shall be recorded and returned to the United States by the contractor at the Warrior extension switchboard, either from its own systetm or from the Warrior extension after the contractor shall have commenced operations thereof as part of its system.

ARTICLE XV.

Operation of Warrior extension, of substations, and of transmission lines—Electric energy to be furnished.—Upon the termination of the period of preliminary operation mentioned in Article XIV, the contractor shall at its own expense operate said Warrior extension, Warrior substation, Muscle Shoals substation, the transmission line, and the quarry branch line as part of its system and shall maintain the same in readiness to supply and shall supply the demands of the United States and those of its successor in interest hereinafter referred to under this contract to the extent of the capacity of the Warrior extension at the time; provided, that all repairs, renewals, or replacements to and in the Muscle Shoals and quarry branch substations and their apparatus shall be made by the contractor at the expense of the United States. Nothing in this contract contained shall authorize the contractor, except with the written approval of the Chief of Ordnance, to transmit energy over said transmission lines otherwise than for the use of the United States or its said successor. But with such approval, and upon terms and conditions approved by the Chief of Ordnance, the contractor may transmit energy over said lines. All energy to be supplied by the contractor shall be in the form of three phase, 60 cycle, alternating current, at a pressure of approximately 110,000 volts. It shall be measured at the low tension switchboard of the Warrior substation and thence delivered to the transmission line at the Warrior substation to be transmitted to the Muscle Shoals substation and that of the quarry branch line, as may be required by the United States, and all at the expense of the contractor.

The contractor shall operate said properties in an efficient manner and do all things necessary or appropriate in and about such operation, including procurement of all labor and materials, except that the United States may at any time furnish the contractor with the necessary coal for the operation of the Warrior extension, subject, however, to the provisions of Article XVI. The contractor shall use its best efforts to maintain a reserve of coal adequate to insure a continuous supply of energy from the Warrior extension.

The manufacturers' rated capacity of the generating unit in the Warrior extension is 30,000 kw. when operated under the following conditions: Steam pressure, 200 pounds per square inch; superheat, 200 degrees F.; vacuum, 29"; and power factor, 90 per cent.

The contractor shall so maintain the operating conditions of the Warrior extension which are within its control, that, provided the power factor of the load of the United States at the Warrior extension is not less than 90 per cent, the United States shall receive from the Warrior extension a supply of electric energy at least equal to that which said unit is capable of producing under normal operating conditions.

The Warrior extension and Warrior substation are to be operated in parallel with the steam generating plant of the United States nitrate plant No. 2 at Muscle Shoals, and the contractor shall maintain at the Warrior extension and substation and the United States at its said steam generating plant such usual and proper operating conditions as to voltage and frequency as may be required to make such operation in parallel successful.

The contractor shall operate said properties and supply energy as aforesaid for the United States or its said successor for the period of ten (10) years from the date of this contract.

The United States shall upon request furnish the contractor from time to time such information as it may possess concerning its probable requirements for energy, in order that the contractor may make all necessary arrangements to supply the same in an efficient and economic manner.

Should the United States at any time during the war and within three years after its termination require more energy than the Warrior extension is capable of producing and delivering at such time, or should an emergency arise preventing the operation of the Warrior extension, then, in either event, the contractor shall supply energy to meet the requirements of the United States from its own system, provided it can do so without curtailing the service to any of its firm power customers existing on December 1, 1918, or operating the steam generating plant of the Birmingham Railway, Light & Power Co.; and provided further, that the requirements of the United States in respect to such energy shall, to the extent of the capacity of the Warrior extension, be met in preference to those of any customer of the contractor other than said firm power customers existing on December 1, 1918.

ARTICLE XVI.

Supply of coal by the United States.—All coal supplied to the contractor by the United States shall be so supplied at prices not in excess of those at which coal can be obtained by the contractor delivered at the Warrior extension, making due allowance for the difference, if any, in the quality of the coal from that specified in Article XX and in accordance with the procedure therein indicated. In exercising this option the United States shall supply coal in such quantity, at such a rate, and in such a manner as not to put the contractor to any additional expense, and so as not to interfere with the continuous operation of the Warrior extension at its capacity, with a sufficient supply on hand for reserve; provided that the contractor may use coal for the purchase or supply of which it has previously and in good faith become definitely committed in preference to coal to be supplied by the United States. The price of any coal supplied by the United States shall be deducted from any payments due the contractor for energy as such coal is from time to time used in the generation of energy.

ARTICLE XVII.

Payments by contractor.—(1) Beginning at the termination of the period of preliminary operation mentioned in Article XIV, and so long as the United States shall require the contractor to supply energy to the United States for the operation of either or both of said nitrate plants, the contractor shall pay to the United States monthly for the use of the Warrior extension and Warrior substation interest at the rate of 6 per cent per annum upon the actual cost to the United States of said extension and substation, less the amount of the accumulated fund referred to in Article XIX, as the same may vary at each monthly computation of such interest. In computing such cost there shall be excluded all payments by the United States for supervision, inspection, and protection of the Warrior extension or Warrior substation, but there shall be included the pro rata share of the contractor's fee mentioned in Article XIII attributable to the construction and equipment of the Warrior extension and Warrior substation. The contractor shall also pay to the United States interest monthly at the rate of six per cent (6 per cent) per annum upon the sum of thirty thousand dollars ($30,000) and upon the cost of the rails and rail-joint material referred to in subdivision 7 of Exhibit E. The payments hereunder shall be made at the same time as the monthly payments due the contractor from the United States under Article XVIII are made.

(2) During such period as the contractor may under the provisions of Article XXI be relieved of said monthly payments, the contractor shall pay to the United States monthly in lieu of said monthly payments, one and one-half mill for each kilowatt hour of energy produced by the contractor at the Warrior extension and measured at the Warrior extension switchboard for sale to customers other than the United States. Said rate of 1½ mill is subject to reduction by an amount to be ascertained on the first day of each month by dividing by 200,000,000 the interest at 6 per cent per annum on the then accumulated fund.

ARTICLE XVIII.

Payments by the United States for electric energy, including minimum payments.—(1) The United States shall pay to the contractor at the rate of six and one-half (6½) mills for each k. w. h. of energy actually delivered to the United States at the Warrior substation. Said rate is based upon the power factor of the load of the United States measured at the Warrior substation being no less than eighty-five per cent (85%). Energy generated at the Warrior extension or the Warrior substation shall be measured at the low-tension side of the step-up transformers at said Warrior substation; and energy generated elsewhere on the contractor's system and delivered to the United States hereunder shall be measured at the Warrior substation either at the low-tension side of the said transformers, or, at the contractor's option, at approximately 110,000 volts. If so measured at 110,000 volts, the contractor shall supply the necessary instruments and accessories at its own expense.

(2) Where the amount due for energy at said rate of six and one half mills in any one calendar month from and after December 1, 1918 (said energy having been delivered at a maximum rate not in excess of the capacity of the Warrior extension), is less than thirty thousand (30,000) dollars, the United States shall, nevertheless, pay to the contractor the sum of thirty thousand (30,000) dollars as a minimum payment for service during such month, subject, however, to the provisions of the first paragraph of Article XXI.

(3) The contractor shall render all bills on or before the tenth day of each calendar month for electric energy furnished during the preceding calendar month, and payment thereof shall be made within fifteen days after such bills are rendered.

ARTICLE XIX.

Amount to be retained by United States from payments for electric energy.—From and after such date as the contractor shall begin to operate the Warrior extension and Warrior substation as a part of its own system the United States shall retain two mills per k. w. h. from the amounts payable to the contractor by the United States under Article XVIII hereof, except that (*a*) in no case shall the said minimum monthly payment by the United States be less than $30,000, and (*b*) the United States shall retain no part of the payments due for energy delivered by the contractor at a rate in excess of the capacity at the time of the said Warrior extension, provided that said two mills shall no longer be retained by the United States when the accumulated fund shall equal the actual cost to the United States of the Warrior extension and the Warrior substation, computed as set forth in Article XI. The funds so retained shall accumulate in the hands of the United States but without the addition of interest, and shall be applied or otherwise disposed of in accordance with the provisions of Article XXII.

ARTICLE XX.

Price for electric energy to vary with price of coal and labor.—(1) The rate of six and one-half mills per k. w. h. is based upon the use of unwashed run-of-mine Alabama coal, having a heat value of approximately thirteen thousand five hundred (13,500) British thermal units per pound "as received," at the mine price of two dollars and thirty cents ($2.30) per ton, and for variations from such standards the following adjustments shall be made monthly in said rate, but only as it relates to energy generated in the Warrior extension or Warrior station for the use of the United States.

The actual average cost per ton of coal consumed under the boilers of the Warrior extension and the warrior station shall be the average cost per ton of the total quantity of coal consumed, calculated on the basis of the mine prices fixed by the United States Fuel Administration for the respective mines, plus transportation charges. In the event that the United States Fuel Administration shall not fix such mine prices, then such actual average cost shall be calculated on the basis of the prevailing competitive market prices at the various mines from which the coal is obtained, plus transportation charges.

In the event that the average heat value of the coal used during any calendar month is less than thirteen thousand (13,000) or more than fourteen thousand (14,000) British thermal units, then said actual average cost of coal used during such month shall be corrected by multiplying such actual average cost by the ratio of thirteen thousand five hundred (13,500) to the actual heat value of the coal as determined by tests. If the average heat value of the coal falls within the limits of 13,000 and 14,000 British thermal units no change shall be made in the actual average cost.

The said rate of six and one-half mills ($0.0065) shall be adjusted for such calendar month by an increase or a decrease of one hundredth of a mill ($0.00001) for each increase or decrease of one cent ($0.01) per ton in the corrected average cost of coal above or below said price of two dollars and thirty cents ($2.30) per ton.

The price for coal used in determining said rate of six and one-half mills ($0.0065) shall not exceed the price at which an adequate and bona fide supply of coal for the operation of the Warrior extension can be procured at the time, and said cost of coal so used in determining said rate shall, except as otherwise provided herein, be the said actual average cost of the coal consumed during the calendar month for which the determination is made.

As soon as practicable after the first day of each month the contractor shall render to the United States a statement showing the actual average cost per ton for coal delivered during the preceding month to the track hoppers or coal-storage piles at Gorgas, the amount so delivered, the heat value of the coal, and the actual average cost of coal on hand at the beginning of the month for which bill is rendered. The term "ton" as used in this article shall mean the net ton of two thousand (2,000) pounds.

Either the contracting officer or the contractor may at any time request that analysis of representative samples of the coal used in the operation of the Warrior extension and Warrior station be made by a competent person acceptable to both parties to determine its quality and heat value. Upon failure of the parties to agree upon such a person within ten days after such request is made known, the Bureau of Standards shall make the analysis. If any such analysis shows that the heat value is higher than fourteen thousand (14,000) British thermal units per pound, then the United States shall pay the cost of the analysis; if the heat value is shown to be lower than thirteen thousand (13,000) British thermal units, the cost of the analysis shall be paid by the contractor, and if the heat value is shown to be not less than thirteen thousand (13,000) nor more than fourteen thousand (14,000) British thermal units, the cost of the analysis shall be divided equally between the United States and the contractor.

All coal tests made under this article shall be conducted in accordance with the standard method of analysis of the American Chemical Society and the bomb calorimeter shall be used in determining the heat value.

(2) In the event that the United States shall use energy obtained under this contract otherwise than in the manufacture of munitions of war, or in the event that the United States shall assign or transfer to another the right to obtain energy under this contract as hereinafter provided, then the following labor adjustment clause shall apply:

Should the cost of labor for the operation of the Warrior extension, said transmission lines, and said substations be increased the contractor may submit to the contracting officer or to the successor of the United States, as the case may be, a schedule at intervals of six months or more showing such increased cost over the cost prevailing on October 1, 1918. Upon the acceptance of such schedule, the rates payable for energy shall be increased by an amount proportionate to such increase in the cost of labor. Similarly, if in the opinion of the contracting officer or the successor of the United States, as the case may be, such cost of labor shall be decreased, the contracting officer or such successor, as the case may be, may at like intervals submit a schedule to the contractor showing such decrease below the cost prevailing on October 1, 1918. Upon the acceptance of such schedule the rates payable for energy shall be decreased by an amount proportionate to such decrease in the cost of labor. The contractor shall with all convenient speed file with the contracting officer a schedule showing said cost of labor prevailing on October 1, 1918.

Each party to whom a schedule may be presented under this subdivision shall have one month's time within which to verify the correctness thereof. Any schedule not rejected within such time shall be deemed to have been accepted as correct. In the event of disagreement as to any schedule within one month of presentation thereof the matter in dispute shall be adjusted under Article XXV. Any changes in rates under this article shall relate back to and take effect on the first day of the month next following the submission of said schedules or from such other date as may be fixed under Article XXV.

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ARTICLE XXI.

Suspension of demand for electrical energy by the United States.—The United States may at any time and from time to time upon sixty days' written notice, suspend its demand for energy, in which event and provided such suspension shall exceed sixty days, the United States shall during the period thereof be relieved of the obligation to make said minimum monthly payment of thirty thousand (30,000) dollars and the contractor shall, during such period, be correspondingly relieved of the payments mentioned in subdivision (1) of Article XVII. The service to be rendered under this contract shall be restored on sixty days' written notice to the contractor by the United States, and after such restoration said minimum monthly payment and said payments for the use of Warrior extension and substation shall again be made, as if there had been no suspension.

A suspension of service under this article shall not operate to relieve the contractor of the obligation to maintain said transmission lines. In case such suspension exceeds sixty (60) days, the United States shall for the period of suspension in excess of sixty (60) days, pay the contractor the cost of maintaining said transmission lines, plus 10 per cent of such cost. The United States may, on thirty (30) days' written notice to the contractor, take over the maintenance of said transmission lines during any period of suspension of service.

Nothing herein contained shall prevent the contractor during any such suspension from continuing to operate the Warrior extension and substation upon making payment for enegy as provided in subdivision (2) of Article XVII.

ARTICLE XXII.

Sale to or purchase by contractor.—(1) At any time subsequent to three years after the termination of the war, the United States shall have the option to sell to the contractor and the contractor shall, upon written demand of the United States, buy all its rights, title, and interest in and to the Warrior extension and Warrior substation with all rights appurtenant thereto at the value fixed by arbitration as hereinafter provided. The accumulated fund referred to in Article XIX shall be applied in payment of said value, and any excess of said fund over said value shall be paid over to the contractor, provided that if the actual cost of Warrior extension and Warrior substation to the United States shall exceed said value, then only the excess of said fund over said cost shall be paid over to the contractor. If said value shall exceed said fund, then the contractor shall pay to the United States the excess in the manner hereinafter provided. As soon as the amount of said value shall be paid or secured as in this article provided, the United States shall convey all of its right, title, and interest in and to said properties to the contractor.

(2) If and when said accumulated fund shall be equal to or greater than the actual cost to the United States of the Warrior extension and the Warrior substation, the contractor may demand that the United States convey all of its right, title, and interest in and to said properties to the contractor and that it pay over to the contractor the excess, if any, of said fund over said cost, retaining the balance. The United States shall comply promptly with such demand.

(3) The contractor may also at any time demand that the United States convey to it all of the right, title, and interest of the United States in and to the Warrior extension and the Warrior substation upon payment to the United States of any excess of the actual cost of said properties over the amount of said accumulated fund then in the possession of the United States. And upon payment to the United States of such excess the United States shall comply with said demand, retaining the whole of said accumulated fund.

(4) At any time after December 1, 1926, or such earlier period as the United States shall finally cease to take energy under this contract, said accumulated fund being less than the actual cost to the United States of the Warrior extension and Warrior substation, the contractor may demand that the value of said properties be fixed by arbitration; and

(*a*) If the value so fixed is equal to or less than the amount of such accumulated fund, then the United States shall convey to the contractor all of its right, title, and interest in and to said properties by proper instruments in writing within sixty (60) days after notice of the award, retaining in payment the whole of said fund.

(*b*) If the value so fixed be greater than said fund, then the United States shall upon payment by the contractor of the amount by which such value is greater than said fund, or payment thereof being secured as hereinafter provided, convey all of its right, title, and interest in and to said properties to the contractor by proper instruments in writing within sixty (60) days after notice of the award, retaining in payment the whole of said fund.

(5) In the event that the contractor shall on demand of the United States fail or refuse to purchase the Warrior extension and Warrior substation under any of the foregoing subdivisions of this article, the United States may sell the same to another, subject to the conditions that said properties shall not be operated and that they shall be removed within six (6) months after the sale has been consummated. Upon the consummation of such a sale with another purchaser the United States shall pay over to the contractor the whole of said accumulated fund, less the amount, if any, by which the actual cost of the said properties shall exceed the price realized from such sale.

(6) In the event that (*a*) the Warrior extension and Warrior substation are not sold in the manner herein provided to the contractor or to another within the period of ten (10) years referred to in Article XV, or (*b*) said properties not having been so sold, the United States or its said successor shall cease for 365 consecutive days to take any energy from the Warrior extension; the United States shall, upon six months' notice in writing from the contractor, remove the Warrior extension and Warrior substation from the lands of the contractor unless it shall within ninety (90) days after receipt of such notice proceed to exercise its option under subdivision (1) of this article. In the event of removal pursuant to such notice, the United States shall leave the premises in a neat and workmanlike condition and shall pay over to the contractor the entire amount of the said accumulated fund then in its possession.

(7) If the United States or its said successor shall for a period of two consecutive years fail to take energy from the Warrior extension, and in any event at the expiration of said period of 10 years, the United States shall, upon six (6) months' written notice from the contractor, remove such of said transmission lines and appurtenances owned by it as are located on land or rights of way owned by the contractor; provided, that upon receipt of such notice the United States may require the contractor to purchase all of its right, title, and interest in and to said transmission lines and their appurtenances a their fair value as fixed by arbitration.

(8) The contractor shall have a period of five years in which to make payment of any amounts due the United States under subdivisions (1) and (4) of this article over and above said accumulated fund, provided that all deferred payments shall be secured in a manner satisfactory to the Chief of Ordnance. During such period the contractor shall pay to the United States interest on deferred payments at the rate of 5 per cent per annum. At the request of the contractor said period shall be extended two and one-half years, interest during such extended period to be at the rate of 6 per cent per annum. The contractor may anticipate any deferred payment in whole or in part.

(9) The value of said properties to be determined under this article shall be their fair value, and it shall be fixed by arbitration under Article XXIV.

(10) Actual cost under this article shall be computed as provided in Article XI.

ARTICLE XXIII.

Energy for successor in interest of the United States.—If at any time within the period of ten years referred to in Article XV the United States shall sell or lease its said nitrate plants at Sheffield and at Muscle Shoals, or either or any part of said plants, the United States may assign and transfer to the purchaser or lessee thereof (in this contract referred to as the successor of the United States) the right to demand and receive electric energy under this contract to the extent of the capacity of the Warrior extension at the time, and any other rights hereunder as may be agreed upon between said successor and the United States, excluding, however, the right to furnish coal to the contractor and the right to require the contractor to supply energy from other parts of its system under Article XV, also the provisions of Articles XVI, XVII, subdivision (3) of Article XVIII, Articles XIX, XXI, and XXII.

If the successor desires to accept said assignment and transfer, it shall so signify in writing simultaneously with the execution of said assignment and transfer by the United States, and shall thereupon be deemed to have accepted

and assumed all of the obligations of the United States under this contract in relation to the portion thereof so assigned and transferred (including the obligation under subdivisions (1) and (2) of Article XVIII), except as modified in the following respects:

(*a*) Such successor may give the contractor six months' notice in writing that it will cease taking energy under this contract. Such notice shall have the effect of terminating all of the rights and obligations of the successor under this contract from and after the expiration of such six months' period, and the successor shall thereafter have no further right to demand energy hereunder.

(*b*) Bills shall be rendered monthly by the contractor for energy supplied during the previous month, and if not paid at its office within ten days from the date of rendition the contractor shall have the right upon five days' written notice to suspend service; and if not paid within a further period of thirty days the contractor shall have the right, at its option, by notice to the successor, to cancel and terminate its agreement for further delivery of energy to the successor, whereupon all rights of the successor as to such further energy shall cease.

(*c*) Without the written consent of the contractor the successor shall not sell or dispose of any energy furnished hereunder or which may be generated directly or indirectly therefrom, except to tenants on the successor's premises; nor transfer or assign to anyone, directly or indirectly, the right to obtain energy under this contract. No right or benefit hereunder shall be assigned or transferred by operation of law without like consent.

(*d*) Service to said successor shall, in addition, be subject to such other reasonable rules and regulations, not inconsistent with the terms of this contract, as may then be in effect or as may thereafter be established from time to time by the contractor or by the Alabama Public Service Commission.

Upon the execution of said assignment and transfer by the United States and its acceptance as above provided by the said successor, the United States shall be relieved of all of its liabilities under this contract in so far as they relate to the portion thereof so assigned and transferred.

ARTICLE XXIV.

Arbitration.—Whenever either party is entitled to and desires the determination of the value of any of the properties mentioned in Article XXII, it shall so state in writing to the other party and shall add the name and address of the arbitrator chosen by the party demanding the arbitration. The other party shall, within fifteen (15) days thereafter, choose its arbitrator and notify the party demanding the arbitration of its choice, giving the name and address of such arbitrator. The two arbitrators so chosen shall, within twenty (20) days after being notified by either party that the second arbitrator has been chosen, choose a third arbitrator. If said two arbitrators are unable within twenty (20) days after being so notified to agree upon such third arbitrator, then upon the application of either party, the senior judge of the United States Circuit Court of Appeals for the Fifth Circuit shall have the power to apoint such third arbitrator; ten (10) days' notice of the application to the said senior circuit judge being given by the party applying to the other party. In the event of the disqualification or refusal to act of the said senior circuit judge, the other judges of the said circuit court shall, in the order of their appointment, on similar request have power to appoint such third arbitrator. Vacancies in the board shall be filled in the manner prescribed for the original appointments. By agreement of the parties all of said periods may be extended.

If either party fails to choose an arbitrator within thirty (30) days after receiving the statement in writing of the party desiring the arbitration, then the other party shall choose both, and the third shall be chosen in the manner hereinbefore provided. If the board fails within ninety days after the appointment of the third arbitrator to make a decision, then the third arbitrator shall, unless the time is unanimously extended by the board, be relieved of duty and a new third arbitrator chosen by the two arbitrators or by a circuit judge, in the manner hereinbefore provided.

The arbitrators, when chosen, shall promptly fix a time and place for the hearing, and then and there the parties shall attend and present their respective proofs and arguments. The hearing may from time to time be adjourned by the arbitrators by a writing notifying the parties of the time and place to which such adjournment is made. The arbitrators shall with all reasonable speed determine all disputes and questions submitted to them and notify the parties in writing of their determination. Any award when signed by any two of the arbitrators shall be final and conclusive upon both parties. The expense of the arbitration, including the arbitrators' fees, shall be ascertained and borne as determined by the arbitrators. Said fees shall be subject to the approval of the Chief of Ordnance.

ARTICLE XXV.

Disputes.—Except as herein otherwise provided, all disputes and questions which shall arise under this contract shall be referred to the Chief of Ordnance for determination. If, however, the contractor shall feel aggrieved at any decision of the Chief of Ordnance upon such reference it shall have the right to submit the same to the Secretary of War.

ARTICLE XXVI.

Time—Delays due to causes beyond contractor's control.—It is essential that all work and operations under this contract be carried out as expeditiously as possible, and to this end the contractor agrees to perform all such work and operations on its part with great diligence and the highest speed practicable consistent with the proper performance thereof.

The contractor shall not be held responsible for or be deemd to be in default hereunder by reason of delays in the performance of this contract or interruptions to service caused by strikes, fires, explosions, riots, acts of God, failures of transportation, or other causes beyond the control and without the fault of the contractor: *Provided*, That the contractor shall have promptly and fully notified the contracting officer of any such cause of delay and shall have used its best efforts promptly to remove the same and to obviate the effects thereof: *And provided further*, That such delay shall not have been due to the contractor's failure to comply with any of the provisions of this contract. The contractor shall proceed with the performance of this contract as soon as, and to the extent that, any such cause of delay shall have been removed.

ARTICLE XXVII.

CANCELLATION AND TERMINATION BEFORE COMPLETION.

SECTION 1. *Cancellation for contractor's default.*—If the contractor shall abandon any construction work under this contract, the Chief of Ordnance may cancel this contract by thirty days' notice in writing, without prejudice to any other rights or remedies or to any claim which the United States may have against the contractor. Thereupon the United States shall have the power to complete such constructtion work or enter into agreements with others for the completion thereof, in whole or in part, at the expense of the contractor. Work completely performed in accordance with the requirements of this contract at the date of any such cancellation shall be accepted and paid for by the United States.

SEC. 2. *Termination in public interest.*—If, in the opinion of the Chief of Ordnance, the public interest shall so require, the construction work required by this contract may be terminated by the United States by thirty days' notice in writing. Such termination shall be without prejudice to any claims which the United States may have against the contractor under this contract. After the receipt of such notice the contractor shall not order any further materials or facilities, or enter into any further subcontracts, or make any further purchases in connection with the performance of this contract, without written consent previously obtained from the contracting officer, but inspection of the completed work and acceptance thereof by the United States in accordance with the terms of this contract shall continue during such period of thirty days as though such notice had not been given.

In the event of and upon such termination of this contract prior to completion for any reason other than the abandonment thereof by the contractor, the United States shall make payments to and protect the contractor as follows:

(1) The United States shall pay for (*a*) all expenditures made by the contractor in good faith and in connection with the performance of this contract for which the United States is obligated to pay under the terms of this contract and which the United States has not previously paid, (*b*) in addition

the United States shall pay the contractor for all work completed in accordance with the provisions of this contract the sum provided as profit thereon under the terms of this contract and not theretofore paid.

(2) The United States shall discharge the contractor's outstanding obligations incurred by the contractor in good faith in connection with the performance of this contract for which the contractor has not theretofore received reimbursement or protection from the United States and which are of such character that the United States would, under the terms of this contract, have become liable to reimburse the contractor for its expenditures thereunder, had this contract not been so terminated.

SEC. 3. *Assignment of subcontracts.*—In the event of the cancellation and termination of this contract, pursuant to the provisions of the above sections 1 and 2, the contractor shall, upon the request of the contracting officer, assign to the United States, or to such person as the contracting officer may direct, the unperformed portion of any or all contracts and subcontracts made by the contractor in contemplation of or in connection with the performance of this contract. In the event of the failure of the contractor to assign any such contract or subcontracts as herein provided, this contract shall operate as such assignment. It is understood that such assignment in and of itself shall not compel the United States to assume or become responsible for any obligation of the contractor which has arisen prior to such assignment by reason of the contractor's performance of, or failure to perform, the contract or subcontract so assigned.

SEC. 4. *Taking possession of contractor's plant.*—In the event of the cancellation or termination of this contract pursuant to the provisions of the above sections 1 and 2, the United States may, for the purpose of completing the performance of the work herein contracted for, or any part thereof, take possesion of and use any or all of the plants and properties of the contractor used in accordance with Article VII, in carrying out this contract. In such event the United States shall pay to the contractor such reasonable sum for the use thereof as may be agreed upon between the contracting officer and the contractor, or, if they fail to agree, as may be determined in the manner and with the effect provided in Articles XXIV or XXV. Such plants and properties shall be occupied and used by the United States without cost or expense to the contractor; and during such use the United States shall save the contractor harmless from all damages for injury to person or property resulting from such use, the United States, however, reserving any claims which it may have against the contractor under this contract.

ARTICLE XXVIII.

Measuring instruments—Testing.—All energy delivered shall be measured by duplicating polyphase integrating watt-hour meters or others of standard make, to be provided by and installed at the expense of the United States, and kept in repair to the satisfaction of the contracting officer by the contractor at its expense. All energy shall be measured both as to rate of supply and quantity by the average duplicate readings of the meters.

The meters shall be tested and adjusted by the contractor to measure and record within one per cent of absolute accuracy under average operating conditions. In case of dispute, each of the parties hereto shall, upon seven days' written notice to the other, have the right to disconnect any meter and have it tested by a competent and disinterested person acceptable to both parties; and for failure of the parties to agree upon such a person within ten days after such notice has been served, he shall be selected by the Chief of Ordnance. If any meter shall, upon being tested, record more than two per cent in excess of correct registration, the contractor shall pay the cost of the test; if it shall record less than ninety-eight per cent of the correct registration, the United States shall pay the cost of the test; and if the error shall not exceed two per cent, the cost of the test shall be borne by the party in whose behalf the test was made. Any adjustment in the charge for energy made necessary on account of an error in the meter shall cover a period of not exceeding thirty days prior to the time when such test was called for. The United States shall pay for current consumed during such time as a meter is out of order in accordance with the registration of the second or duplicate meter above referred to and in case both meters are in error an amount to be estimated upon the basis of the registration of the meter during a similar period when they were functioning properly.

At all tests, calibrations, readings, and adjustments by either party the other party shall have the right to be represented.

ARTICLE XXIX.

Approval by contracting officer.—The contractor shall not enter into contracts in connection with construction work or proceed with such work until the approval of the contracting officer has been obtained.

Inspection.—All work of every kind to be performed and all property to be acquired or installed under this contract shall at all times be subject to inspection and test by the duly authorized inspectors of the Ordnance Department, and the contractor shall (but at the expense of the United States) furnish all reasonable facilities and assistance requested by such inspectors for the performance of their duties. Such inspectors may reject all work and materials not complying with the terms of this contract, and all work and materials so rejected shall be replaced by the contractor without charge therefor to the United States.

Access to properties.—The duly authorized representatives of the United States shall at all times have free access to the Warrior extension, the Warrior substation, the transmission lines, and all other property owned by the United States for the purposes of inspection testing, making inventories, and any other purpose under this contract, provided that no directions or instructions shall be given the employees of the contractor in respect to the operation of said properties except as in Article XXXV provided. Such representatives of the United States shall also have free access to the properties of the contractor for the purposes of inspection and testing so far as necessary under this contract.

Records.—The contractor shall keep complete records, of such character and in such form as may be approved or required by the contracting officer, as to all construction expenses and as to such operating expenses as may effect the rate to be charged the United States for energy or any other right of the United States hereunder, all of which records shall at all times be open to the inspection of the United States or its duly authorized representatives. Said records shall be retained by the contractor at the disposition of the United States for the period of six years after the termination of this contract.

Audit—Erroneous payments. All accounts shall be subject to audit by the United States. Payments by the United States shall be subject to correction for errors, if any.

ARTICLE XXX.

Payments not subject to counter claims.—All payments hereunder shall be made as and when due, without deduction for any claim or counterclaim; provided, however, that the United States before making any payment as to which there may be a bona fide question may require, as a condition thereof, the giving of an adequate bond for the repayment of such part thereof as may, under Article XXV or otherwise, be found not to be due, failing which, payment shall be made in escrow, subject to the terms of this agreement, to some national bank in the city of Birmingham, to abide the decision of competent authority.

ARTICLE XXXI.

Incumbrances.—The contractor agrees not to create or suffer to be created any lien or incumbrance against any work paid for by the United States, or against any property entering into its performance, and in the event any such lien or incumbrance is created, the contractor agrees promptly to pay and discharge the same or to furnish proper bond or security to have the same released, to the end that said work may become the property of the United States free and unincumbered. In case the contractor shall fail to pay and discharge any such lien or incumbrance or to furnish proper bond or security to have the same released, the United States may do so at the contractor's expense and may deduct from any payments due to the contractor hereunder the amount of any expense so incurred by the United States.

ARTICLE XXXII.

Bond.—The contractor shall, prior to December 1, 1918, furnish to the United States a bond in the sum of fifty thousand dollars, conditioned upon the full and faithful performance by the contractor of all terms, covenants, and conditions hereof in relation to construction work and upon the prompt payment to all persons supplying labor or materials in the prosecution of the construction work under this contract. Such bond shall be in form and with sureties satisfactory to the contracting officer, and, unless it is furnished within the time limited, this agreement may, at the option of the contracting officer, be canceled. The United States shall reimburse the contractor for the premium of such bond.

ARTICLE XXXIII.

Revenue from housing, stores, etc.—All revenue from the operation of any housing, boarding houses, commissaries, stores, infirmary, hospital, and other facilities, the property of the United States, and from refunds, shall during the period of construction be accounted for by the contractor to the United States and shall belong to the United States.

ARTICLE XXXIV.

Contract nonassignable.—Neither this contract nor any interest herein shall be transferred by the contractor to any other party, except to the extent permitted by section 3477, United States Revised Statutes.

Officials not to benefit.—No Member of or Delegate to Congress or Resident Commissioner is or shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this article shall not apply to this contract, so far as it may be within the operation or exceptions of section 116 of the act of Congress approved March 4, 1909 (35 Stats., 1109).

Prison labor.—No person or persons shall be employed in the performance of this contract who are undergoing sentences of imprisonment at hard labor which have been imposed by the courts of the several States, Territories, or municipalities having criminal jurisdiction.

ARTICLE XXXV.

Service of notices.—Notices, directions, instructions, and demands under this contract shall be given in writing only and shall be deemed served upon the contractor if addressed to it at Birmingham, Ala., and either delivered to the general manager at its office in said city or deposited in a postpaid or penalty envelope in any post-office box regularly maintained by the United States. The address of the contractor may be changed at any time by notice in writing to the contracting officer.

Notices shall be deemed served upon the United States if deposited in the registered mail addressed to the Chief of Ordnance, Washington, D. C. All such notices shall identify this contract by stating the contractor's name, the date thereof, and the file and war order number as given on the cover hereof.

The said general manager and the contracting officer may from time to time designate, in writing, others to receive and give notices, directions, and instructions as to specific matters as well as the manner in which the same may be given and received.

ARTICLE XXXVI.

Definitions.—Whenever in this contract the words hereinafter enumerated are used, they shall mean what is set opposite them:

Contractor: The party of the first part and its legal representatives, successors, and assigns.

Chief of Ordnance: The Chief of Ordnance, the Acting Chief of Ordnance, or any duly authorized representative of either.

Contracting officer: The contracting officer executing this contract, his successor or successors, his or their duly authorized agent or agents, and any one from time to time designated by the Chief of Ordnance to act as contracting officer.

Termination of the war: The time when the President of the United States shall by proclamation declare the war terminated.

In witness whereof the parties hereto have caused these presents to be executed and delivered in quadruplicate at Washington, D. C., the day and year first above written.

ALABAMA POWER COMPANY,
By JAMES MITCHELL, *Its President.*
UNITED STATES OF AMERICA,
By WILLIAM WILLIAMS,
Lt. Col. Ord. Dept., U. S. A.,
Contracting Officer.

Witnesses:
C. F. BEAMES.
FRANK D. MAHONEY.

SCHEDULE A.

Being description of Warrior extension, annexed to and made a part of agreement dated December 1, 1917, between Alabama Power Co. and United States of America:

WARRIOR EXTENSION.

1. New power station building of structural steel and brick construction adjacent to contractor's present power generating station.
2. One 225 feet by 18 feet inside diameter radial brick stack.
3. *Apparatus to be installed in said new power station building.*—One 30,000 k. w. General Electric Co.'s (33,333 k. v. a.) 13,200 volt, 3 phase, 60-cycle turbo-generator with 140 k. w. 250 volt direct connected D. C. exciter.
4. One 56,000 square feet Worthington surface condenser together with one 48-inch centrifugal circulating pump driven by 653 h. p. General Electric Co.'s motor; three No. 10 Worthington hydraulic vacuum pumps; two combined steam driven hydraulic supply hot-well pumps; necessary piping; car spring supports; 200 spare condenser tubes; 200 spare ferrules; and 500 tube packings.
5. Twelve 1,200 B. H. P. Babcock & Wilcox Stirling type boilers with superheaters designed for 225 pounds pressure, 200 degrees superheat.
6. Twelve sets of soot blowers for above boilers.
7. Eleven 12-retort Westinghouse underfeed stokers with driving mechanism and Westinghouse engines.
8. One 12-retort Taylor stoker with ABC engine and steam dump grate.
9. Two 36-inch link belt coal conveyors, crusher, and screen with necessary structural support, cross-over dump tracks and housing, substantially as shown on drawings, E–6900, E–6902, C–6658, C–6633, C–6794, C–7158.
10. Two reinforced-concrete coal bunkers.
11. Twenty-four coal gates.
12. Twenty-four automatic weighing machines under coal gates.
13. Twenty-four coal chutes.
14. Twelve reinforced-concrete ash hoppers.
15. Thirty-six 36 by 36 inch ash gates.
16. One 1,000-gallon 50-foot head vertical sump pump direct connected and driven by a motor, with automatic float switch in condenser room.
17. One 1,000-gallon 20-foot head centrifugal sump pump for ash room.
18. Two 100-gallon 40-foot head vertical bilge pumps with automatic float switch.
19. One 15-ton electric trolley locomotive, 250 volt, for handling ashes.
20. Twelve 2 cubic yard rocker dump ash cars, 36-inch gauge.
21. One set of boiler gauges and instruments.
22. Two double unit 430,000 pounds per hour Cochrane feed water heaters.
23. Twelve Copes water feed regulators.
24. Four 1,400-gallon 565 feet head Alberger centrifugal boiler feed pumps; 2 driven by General Electric Co. motors and 2 driven by Alberger steam turbines.
25. Four 80,000 cubic feet per minute Buffalo blowers, each directly connected to a 150 H. P. Westinghouse motor.
26. Four 80,000 cubic feet per minute Green fans, each directly connected to a 150 H. P. Kerr steam turbine.

27. Two 1,200-gallon 150-foot head Alberger centrifugal house service pumps; one driven by General Electric Co. motor; one driven by Alberger steam turbine.
28. One 42-inch Crane Co.'s atmospheric exhaust valve.
29. One set steam exhaust and water piping.
30. One set of Nonpareil steam pipe covering.
31. One 9-panel 550 volt service switchboard for powerhouse motors.
32. One 4-panel D. C. exciter and railway switchboard.
33. One 150-KW. 250 volt D. C. 550 volt A. C. motor-generator set.
34. Six 2,000 amp., 15,000 volt, 3-phase oil switches, with cells.
35. One 800 amp., 15,000 volt, 3-pole single-throw oil switches, with cells.
36. Two 300 amp., 15,000 volt, 3-pole single-throw oil switches, with cells.
37. Two 750 KW., 13,200–55 volt, 3-phase indoor type oil insulated self-cooled transformers, for station service.
38. Two 13,200 volt busses with compartments and with all copper connections and insulators.
39. Three reactance coils, complete, with mountings.
40. Eleven sets of control cables and conduits.
41. Provision for storage of coal, grading, trestles, and tracks, as shown on drawing C–7139, but not including crane or other coal-handling devices.
42. Yard tracks as shown on drawing E–6887.
43. One standard-gauge steam locomotive. (Used during construction.)
44. Eight standard-gauge coal cars, for reloading from coal storage.
45. One 15-ton standard-gauge locomotive crane with boom about 35 feet long, used during construction and to be overhauled and equipped with coal bucket for auxiliary coal handling.
46. One steel guy derrick and engine, for use during construction.
47. One wood guy derrick and engine, for use during construction.
48. Twelve type D or E frame houses, to be in accordance with drawings dated May 29, 1918, sheets 1, 2, 3, 4 for each type—no serial number—by Warren & Knight, architects, Birgingham, Ala.
49. One bath and locker building, in accordance with drawing C–7055.
50. Twenty four-room frame houses, used during construction, to be improved according to drawings C–6453 and 6454, for housing operators.
51. Seventeen two-room frame shanties.
52. Four bunk houses, for use during construction.
53. One hospital.
54. One mess hall, commissary, and storeroom, as additions to Alabama Power Co. facilities, as shown on drawing E–6887.
55. One ice plant.
56. Six miscellaneous commissary and office buildings of a temporary nature for use during construction work only.
57. Water, sewer, light, and telephone lines as additions to Alabama Power Co. facilities, as shown on drawing E–6887.
58. One guard fence (with towers) to inclose powerhouse and substation, substantially as shown on drawings C–6532, A–6914, E–6887.
59. Also such additional facilities as may be authorized by the contracting officer prior to December 1, 1918, for use in connection with the construction and operation of said Warrior extension.
60. Copies of the drawing referred to in this schedule, identified by the parties hereto, are on file in the office of Col. J. W. Joyes, Ordnance Department, Washington, D. C., and are hereby made a part of this agreement.

SCHEDULE B.

Being a description of the Warrior substation and the apparatus therein, annexed to and made a part of agreement dated December 1, 1917, between Alabama Power Co. and United States of America.

1. The Warrior substation shall consist of an extension to the present switching house of the Alabama Power Co. of brick and concrete to house switchboards and control apparatus, and be the terminus of control conduits and cables.
2. Also an extension to the Alabama Power Co. power plant to house oil switches, bus structures, and auxiliary transformers and equipment.
3. One 110,000-volt structural steel bus and switching structure, as shown on drawing C-6532, all erected on suitable concrete foundations.

4. Ten 6667 kva 110,000/13,200-volt single phase oil insulated, water-cooled transformers.
5. Four 3333 kva 44,000/13,000-volt single phase oil insulated, water-cooled transformers.
6. Two 750 kva 13,200/550-volt 3-phase oil insulated, water-cooled transformers.
7. One completed set of oil and water piping for all transformers.
8. Two 110,000-volt electrolytic lighting arresters.
9. Six 300-ampere 110,000-volt choke coils.
10. Eight 13,200-volt 2 pole single-throw indoor type oil switches.
11. Eight 110,000-volt disconnecting switches.
12. Eight 15,000-volt disconnecting switches.
13. One complete set of 110,000-volt copper busses, with necessary connections to apparatus and insulators.
14. One 12-panel switchboard for controlling above apparatus, complete, with necessary indicating and measuring instruments and appurtenances.
15. One set of control cables and conduits, as shown on drawing C–6532.
16. Copies of the drawings referred to in this schedule, identified by the parties hereto, are on file in the office of Col. J. W. Joyes, Ordnance Department, Washington, D. C., and are hereby made a part of this agreement.

SCHEDULE C.

Being a description of the transmission line extending from the Warrior substation to the Muscle Shoals substation on the land of the United States adjacent to United States nitrate plant No. 2, annexed to and made a part of agreement dated December 1, 1917, between Alabama Power Co. and United States of America:

1. One single-circuit, 3-phase, 60-cycle, 100,000-volt transmission line from the Warrior substation at Gorgas, Ala., to the land of the United States, on which is located its Muscle Shoals nitrate plant and substation, and a double-circuit transmission line of similar specifications from the boundaries of the said land of the United States to the Muscle Shoals substation adjacent to the steam generating plant of the United States nitrate plant No. 2, all as shown on drawing No. A–6914.

In general, the transmission lines to consist of three 250,000 C. M. B. & S. gage copper conductors, supported by suspension type insulators from H frame structures, consisting of two creosoted wooden poles and wooden cross arms. Also two $\frac{7}{16}$" galvanized Siemens-Martin ground wires to be attached to the poles, together with the necessary guy wires, braces, and other hardware and appurtenances, in accordance with specifications and bill of material shown on drawing C–7070.

2. A single-circuit telephone line consisting of two No. 10 copper-clad wires supported on wooden cross arms attached to wooden poles separate from the transmission line and parallel thereto and made available for use at frequent intervals by means of telephone booths and instruments.
3. A sectionalizing and lightning arrester station located approximately halfway between Gorgas, Ala., and United States nitrate plant No. 2 at Muscle Shoals.
4. Six patrolmen's and 10 guards' houses and storehouse located at proper intervals along the line.
5. Transformer and substation equipment located at the point of junction of the quarry branch line with the transmission line.
6. Such other facilities as may be authorized and approved from time to time by the contracting officer and erected or installed by the United States in connection with the transmission lines and appurtances mentioned in said agreement.
7. Copies of the drawings referred to in this schedule, identified by the parties hereto, are on file in the office of Col. J. W. Joyes, Ordnance Department, Washington, D. C., and are hereby made a part of this agreement.

SCHEDULE D.

Being a description of the Muscle Shoals substation and the apparatus contained therein, annexed to and made a part of agreement dated December 1, 1917, between Alabama Power Company and United States of America:

1. One 110,000-volt structural steel bus and switching structure, as shown on drawing C–6792, erected on suitable concrete foundations.

2. Seven 6667 kva 13,200/110,000 volts single phase transformers.
3. Two 110,000-electrolytic lightning arresters.
4. Four 110,000-volt outdoor type 3-pole oil switches.
5. Four 110,000-volt 3-phase choke coils.
6. Eight 110,000-volt disconnecting switches.
7. One set of oil and water piping for all transformers including spare oil tank.
8. One set of 110,000-volt buses with necessary connections to apparatus and insulators.
9. Such other facilities as may be authorized and approved from time to time by the contracting officer and erected or installed by the United States in connection with the transmission line.
10. Copy of the drawing referred to in this schedule, identified by the parties hereto, is on file in the office of Col. J. W. Joyes, Ordnance Department, Washington, D. C., and is hereby made a part of this agreement.

SCHEDULE E.

In relation to Drifton extension railroad, annexed to and made part of agreement, dated December 1, 1917, between Alabama Power Co. and United States of America:

(1) The United States Railroad Administration shall rehabilitate and put in condition for service at its expense the disused track extending southeast from Drifton about 7,000 feet.

(2) The United States shall acquire the right of way for the Drifton extension from the end of the disused track of Drifton branch to the property of the Alabama Power Co.

(3) The Alabama Power Co. shall construct at its expense said extension from the end of the disused track to the terminal at Warrior.

(4) The Railroad Administration shall operate said extension for which the Alabama Power Co. shall pay the Railroad Administration a rate of 30 cents per ton on coal from mines on the Drifton extension to the Warrior station and Warrior extension, such rate to be added to the cost of coal transported over said extension for use in operating the Warrior station and Warrior extension.

(5) The Railroad Administration shall maintain the rehabilitated track, but the cost of maintaining said extension shall be assumed by the power company.

(6) The Railroad Administration shall assist the power company in building said extension and shall furnish the construction plant for this purpose if required.

(7) The United States shall supply the rails and rail-joint material required for the portion of said extension to be built by the Alabama Power Co., and shall in addition contribute $30,000 toward the cost of work to be done by the Alabama Power Co., said sum and the cost of said rails and joints shall be deemed a part of the actual cost of the Warrior extension for the purposes of Article XXII.

(8) The United States shall grant the Alabama Power Co. an easement over the right of way to be acquired by the United States pursuant to the foregoing for the period of such easement, and provided such period is twenty-five years or more the Alabama Power Co. shall, upon taking over said railroad extension, reimburse the United States for the cost of such easement.

EXHIBIT F.

Items included in cost of the work annexed to and made a part of agreement dated December 1, 1917, between Alabama Power Co. and United States of America:

(*a*) All labor, material, apparatus, and supplies. All hand tools not owned by the workmen, supplies and equipment necessary for said work; but this shall not be construed to cover machinery or equipment mentioned in section (*c*) of this schedule. The contractor shall make no departure from the standard rate of wages being paid in the locality where said work is being done without the prior consent and approval of the contracting officer.

(*b*) All subcontracts made by the contractor in accordance with the provisions of this agreement.

(*c*) Rental actually paid for construction plant and other equipment, in sound and workable condition, at such rates as may be approved by the contracting officer as being necessary for the proper and economical prosecution of the work.

Rental to the contractor for such construction plant or parts thereof as it may own and furnish at such rates as may be approved by the contracting officer.

When such construction plant or any part thereof shall arrive at the site of the work the contractor shall file with the contracting officer a schedule setting forth the fair valuation at that time of each part of such construction plant. Such valuation shall be deemed final unless the contracting officer shall within five (5) days after the machinery has been set up and is working modify or change such valuation, in which event the valuation so made by the contracting officer shall be deemed final.

When and if the total rental for any such part shall equal the valuation thereof, no further rental thereafter shall be paid and title thereto shall vest in the United States.

The contracting officer may at his option purchase for the United States any part of such construction plant by paying the difference between the valuation of such part or parts and the rentals paid therefor.

Rates of rental as substitutes for rental rates then in effect may be agreed upon in writing between the contractor and the contracting officer, such rates to be in conformity with the rates of rental charged in the particular territory in which the work covered by this contract is to be performed. If the contracting officer shall furnish or supply any such plant or equipment, the contractor shall not be allowed any rental therefor. Rental for the use of the contractor's machine shop at the site of the work to be at such rates as shall be agreed upon by the contracting officer and the contractor.

(*d*) Loading and unloading such construction plant, the transportation thereof to and from the place or places where it is to be used in connection with said work, subject to the provisions hereinafter set forth, the installation and dismantling thereof. and ordinary maintenance, repairs, and replacement during its use in the said work.

(*e*) Transportation and expenses to and from the work of the necessary field forces of the contractor. Procuring labor and expediting the production and transportation of material and equipment.

(*f*) Salaries of engineers, superintendents, timekeepers, foremen, and other employees at the field offices of the contractor in connection with said work, also the salaries of other employees engaged on this work at the contractor's principal office. In case the full time of any such employee of the contractor is not applied to said work but is divided between said work and other work his salary shall be included in this item only in proportion to the actual time applied to this work. The salaries of the contractor's executive and general officers shall not be included.

(*g*) Rent for office space required for necessary offices in the city of Birmingham, Ala., but this shall not include payment of any rent for the contractor's regular offices or any expense incident to conducting same. Rent for buildings and equipment required for necessary field offices, and the cost of maintaining and operating commissaries and hospitals and minor expenses as telegrams, telephone service, expressage, postage, etc., in connection with such office.

(*h*) Such bonds, fire, liability, and other insurance as the contracting officer may approve or require and such losses and other expenses not compensated by insurance or otherwise as are found and certified to by the contracting officer to have been actually sustained (including settlements made with the written consent and approval of the contracting officer) by the contractor in performance of said work.

(*i*) Permit fees, deposits, royalties, and other similar items of expense incidental to the execution of this contract and necessarily incurred and specifically approved in advance by the contracting officer.

(*j*) Such proportion of the transportation. traveling, and hotel expenses of the officers, engineers, and other employees of the contractor as is actually incurred in connection with this work.

(*k*) Such other items as should, in the opinion of the contracting officer, be included in the cost of the work. Before such an item is allowed by the contracting officer, it shall have been specifically certified as being allowed under this paragraph.

(*l*) Such cost shall not include interest on capital or borrowed money nor charges for the use or occupancy of the contractor's property or facilities except as otherwise specifically herein provided.

STATE OF NEW YORK, *County of New York:*

I hereby certify that the following are correct extracts from the minutes of certain meetings of the board of directors of Alabama Power Co., at which said meetings there was present a quorum of the said board authorized to transact the business hereinafter described; that the proceedings of the said meetings were in accordance with the charter and by-laws of the company, and that the same have not been revoked, annulled, or amended in any manner whatsoever.

I further certify that I am the custodian of certain records of said company, including the minutes of meetings of the board of directors.

Special meeting held November 4, 1918.

On motion,

Resolved, That the president and vice president, or either of them, is separately authorized to sign and execute on behalf of this company any and all proposals which may be submitted and any contracts, bonds, or other documents relative to any work which is or may be awarded by the United States Government to this company, and also any contracts and bonds with the said Government concerning such work.

Annual meeting held March 11, 1918.

On motion duly made and seconded, the following officers of the company were elected to serve for the ensuing term and until their successors are elected and qualified:

James Mitchell, president; Thomas W. Martin, vice president; Wiley Alford, secretary; Wiley Alford, treasurer; H. S. Swan, assistant secretary; H. S. Swan, assistant treasurer; M. P. Randall, assistant secretary; M. P. Randall, assistant treasurer.

In witness whereof I have hereunto set my hand and affixed the corporate seal of the company the 7th day of November, A. D. 1918.

[SEAL.] H. S. SWAN. *Assistant Secretary.*

NOVEMBER 9, 1918.

From: Lieut. Col. William Williams, Ordnance Department, United States Army.
To: Col. J. W. Joyes, Ordnance Department, United States Army, Chief of the Nitrate Division, Ordnance Office, through the Chief of Ordnance.
Subject: Designation of contracting officer under contract No. T-69. (Army No. 12385.)

1. You are hereby authorized to act in my stead as contracting officer for all purposes and in all respects contemplated by the contract dated the 1st day of December, 1917, between the Alabama Power Co. and the United States of America, by Lieut. Col. William Williams, Ordnance Department, United States Army.

WILLIAM WILLIAMS,
Lieutenant Colonel, Ordnance Department, U. S. Army,
Contracting Officer.

[First indorsement.]

From: The Chief of Ordnance, United States Army, November 12, 1918, to Col. J. W. Joyes, Ordnance Department, United States Army.

1. In accordance with the terms of the above-mentioned contract, dated the 1st day of December, 1917, between the Alabama Power Co. and the United States of America, by Lieut. Col. William Williams, Ordnance Department, United States Army, therein designated as the contracting officer, you, as Chief of the Nitrate Division, Ordnance Office, and in the event of your relief from that position, your successor therein, are hereby designated to act as contracting officer thereunder in all respects and for all purposes contemplated by that contract.

C. C. WILLIAMS,
Major General, Chief of Ordnance, U. S. Army.

The CHAIRMAN. By reason of the specific language of the contract itself, you came to the conclusion that these separate contracts which were entered into by the officers of the corporation, I imagine, and the Government of the United States, are absolutely void and of no effect.

Col. HULL. The options to purchase are nonenforceable unless ratified by Congress.

The CHAIRMAN. Will you go right ahead with your statement and state anything else you have to say about the matter?

Col. HULL. Another question that was before the office was the contract that we had between the General Chemical Co. and the United States relative to nitrate plant No. 1, the apparatus and the processes for nitrate plant No. 1. The opinion of the office is dated December 14, 1920. We answer a number of inquiries as to the rights of the Government as to the use of our properties. It relates primarily to patent rights.

The CHAIRMAN. Will you kindly insert that in the record? Who is that contract signed by, or was it signed?

Col. HULL. I have not that contract in front of me now. I can get that and insert it. It was a tender by the General Chemical Co., dated June 5, 1917, submitted by Mr. W. H. Nicholls, chairman of the board, and Mr. John A. Martin, secretary, and accepted on behalf of the President July 14, 1917, by Newton D. Baker.

The CHAIRMAN. Do you hold that that contract or that agreement comes in the same category as the agreements with the Alabama Power Co. and the Air Nitrates Corporation?

Col. HULL. No, sir; the question here was a limitation whereby the Government received the right to use certain patent processes and apparatus, together with all improvements in the art made, so long as the Government continued the use of the process, and the Government agreed to exclude the public from all works "in which said process shall be employed," etc.; in other words, to keep it secret, and we held that the obligation of secrecy had expired by reason of the fact that the contract was no longer recognized by the General Chemical Co. and whatever we had there was a matter of general information obtained from the other side, after the war, anyway.

The CHAIRMAN. Are those the only contracts you have respecting these matters?

Col. HULL. They are the only ones submitted, except the one of Mr. Ford's. On January 17 the Secretary of War called upon my office for a memorandum as to whether there was a mandate upon him to sell the Muscle Shoals nitrate plant, which I answered in a short memorandum that there was not, and that it was a matter for Congress, which I will also insert in the record.

(The memorandum referred to is as follows:)

JANUARY 17, 1922.

Memorandum for the Secretary of War.
Subject: Is there any mandate upon the Secretary of War to sell the Muscle Shoals nitrate plant?

The only statute authorizing the sale of manufacturing plants under the jurisdiction of the War Department is contained in the act of July 9, 1918 (40 Stat. 850), in the provision authorizing the President, through the head of any executive department, to sell war supplies, material, and equipment "and any building, plant, or factory acquired since April 6, 1917, including the lands upon which the plant or factory may be situated, for the production of such war supplies, materials, and equipment * * *"

This authority may be considered in the nature of, or equivalent to, a direction or mandate to sell war supplies, material, and equipment, and also manufacturing plants no longer needed for Government use, but does it apply to the Muscle Shoals nitrate plants? This question must be answered in the light of the provisions of section 124 of the national defense act of June 3, 1916 (39 Stat, 215), which authorized the President to cause to be constructed a nitrate plant, at some location to be determined by him after an investigation, for the manufacture of nitrate for military purposes in time of war and for fertilizers for agricultural purposes. There was appropriated the sum of $20,000,000 theefor, this sum to be raised by the Secretary of the Treasury from the sale of Panama Canal bonds. Among other provisions of the section special attention is invited to the following:

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital."

It is understood by this office that Muscle Shoals was selected by authority of the President as a site for the nitrate plant authorized by the national-defense act, and that Plant No. 1 and the Wilson Dam and certain other facilities have been paid for in part from the $20,000,000 appropriated by the national-defense act. It appears that about $16,000,000 has been expended from that appropriation, chiefly, however, for the construction of the Wilson Dam. It is understood that the land for the Nitrate Plant No. 1 was paid for from that appropriation, but the construction of Plant No. 1 and all expenses in connection with No. 2 were paid for from war appropriations for the Ordnance Department.

It thus appears that the Muscle Shoals nitrate project, considered as a whole, was initiated by Congress by the provisions of the national-defense act of June 3, 1916, and that a considerable portion of the expenditures for the plant have been made from the $20,000,000 appropriated by that act.

In my opinion the general authority contained in the act of July 9, 1918, supra, for the sale of war supplies and plants acquired since April 6, 1917, does not apply to the Muscle Shoals project, considered as a whole. It is a rule of statutory construction that a general statute does not repeal or supersede a prior particular statute unless there is some express reference to the previous legislation on the subject, or unless there is a necessary inconsistency in the two acts standing together. *Ex parte Crow Dog.* (109 U. S. 556, 570.) I consider, therefore, that the special provision contained in section 124 of the national-defense act, directing that the plant therein authorized be operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital, is applicable to this plant as a whole and is a restraint upon its sale. The same statute would prevent the lease or rental of the plant for private operation.

J. A. HULL,
Acting Judge Advocate General.

[Second indorsement.]

WAR DEPARTMENT,
JUDGE ADVOCATE GENERAL'S OFFICE,
December 14, 1921.

TO THE ADJUTANT GENERAL OF THE ARMY:

1. By the preceding indorsement you refer to this office for opinion the questions set forth in subparagraphs (*a*) to (*d*), inclusive, of paragraph 4, and subparagraphs (*a*) to (*f*) of paragraph 5, of the letter of the Chief of Ordnance dated November 2, 1921. (00 160/20041.)

2. These questions relate to the contract between the General Chemical Co. and the United States, executed on July 14, 1917, whereby the Government received the right to use certain patented apparatus and processes therein described, together with all improvements in the art made or acquired by the General Chemical Co. at any time "so long as the Government shall continue the use of said processes." The authority for the contract appears to have been section 124 of the act of June 3, 1916 (39 Stat., 215). The patented processes mentioned in the agreement are embodied in patents Nos. 1141947, 1141948, 1142363, 1151537, 1159364, and 1159365, and the agreement contained no definite provisions for its termination.

3. A short time after the agreement was made the Government proceeded to build nitrate plant No. 1 at Sheffield, Ala., in accordance with the plans of the General Chemical Co., the first unit being completed in June, 1918. Thereafter trial operations were carried out in the above-mentioned unit with the assistance and under the instruction of the General Chemical Co. organization throughout the remaining months of the year of 1918. It became evident to those in charge about the latter part of December, 1918, that extensive changes in the plant would be necessary before it would operate successfully, and thereafter the personnel was reduced to the point of stand-by. Presumably on account of the armistice no immediate efforts were made to resume operations. However, extensive negotiations were carried on between the agents of the Government and those of the General Chemical Co., in which an agreement was attempted whereby the chemical company would take over the nitrate plant and resume the research. No agreement, however, was ever consummated between the parties. During the time the Government was operating the plant it had an understanding with all its officers and employees as follows:

"In consideration of my employment by the United States and its agreement to pay me for my services, and in consideration of my access through such employment to confidential information as to processes and apparatus used by or communicated to the United States, I agree that I will not divulge any information so gained without express written permission of the Secretary of War, or his duly appointed representatives, and that I will use my best efforts to prevent improper disclosures of any confidential information by others."

This agreement being between the Government and its employees was not shared by the contractor, the chemical company.

4. The Ordnance Department appears to have been still interested in the development and research incident to the Government experiments in the above-mentioned plant, for on August 13, 1919, Mr. A. E. Hecker, of the nitrate division, requested information from the General Chemical Co. as to the methods of manufacture and durability of catalysts No. 719, No. 698, and No. 744, in response to which request the General Chemical Co. on August 22, 1919, replied:

"In response to the request for information contained in your letter to us of the 13th instant, the writer is directed by the chairman of the board to advise you that, as this company is under no present obligation to furnish such information to your office, we must respectfully decline to do so."

Apparently having in mind the above-mentioned contract, Col. Burns, of the Ordnance Department, on September 8, 1919, requested by letter of the General Chemical Co. the reason for their refusal to give the information called for in the Hecker letter of August 13, and the chemical company replied by their letter of September 13, 1919, as follows:

"If, as we understand, your request for information was made pursuant to clause 4 of our tender of June 5, 1917, we need only to remind you that by the express terms of this clause our obligation to communicate improvement to the Government was limited to the period during which the Government should continue the use of our process and that the Government's plant for the use of that process has been shut down for nearly a year."

5. On June 6, 1919, a commission designated the "United States Fixed Nitrogen Commission" was sent to Europe to ascertain the development of nitration processes abroad. This board investigated the British, French, and German processes, and reported particularly on the German development, and their report show that the processes as covered by the patents of the General Chemical Co. were not only well known and understood, but that they had been extensively practiced for several years in Germany.

6. The agreement of July 14, 1917, contains no express provision for its termination other than the terms "so long as the Government shall continue to use said process," and "in which said processes shall be employed." The letter of August 22, 1919, in which the chemical company states "this company is under no present obligation to furnish such information to your office" would indicate that the chemical company believed that the contract was no longer in force. By the further information contained in the letter of September 13 the chemical company states that their refusal to give the information is upon the ground that the use of their process in the Government plant has been discontinued for more than a year and therefore fell outside the provision of paragraph 4 of the agreement to furnish information "so long as the Government shall continue the use of said processes." It appears that although the plant was shut down because the process as used under the advice and direction of the chemical company did not prove satisfactory, the Government agents carried on experiments and inquiry along that line with a view to determining an efficient method of obtaining the product desired. The plant having been placed in standby and so remaining for about a year, the question arises as to whether this was a discontinuance of the use of the process. The chemical company takes the stand the the process has ceased to be used by the Government. This position implies that the contract is completed and has expired, because the only limitation on its life is governed by its terms, which include "so long as the Government shall continue to use said process," "exclude the public * * * from all works in which said processes shall be employed," etc. These terms appear in the contract where, had there been a definite time limit in the minds of the parties, it would have been set forth. It appears that the intentions of the parties were that the contract should govern as long as the Government made use of the process and no longer. The action by the chemical

company estops that company from taking the position that the process was merely temporarily discontinued.

7. The questions propounded by the Chief of Ordnance are set forth and answered seriatim:

(4a) Is the agreement of July 14, 1917, still in effect? Answer. The contract of July 14, 1917, may be considered as terminated as of the date of the discontinuance of the process by the Government.

(4b) Can the plant be sold as a going concern to parties desiring to develop it as a nitrogen fixation plant? Answer. Since it clearly appears that the plant was operated without success and later completely closed down due to the fact that operation resulted in a failure, it can not be said to be a going concern, and therefore could not legally be sold as such, and in the sale of the plant no further warranty should be given than a statement that it is sold "as is."

(4c) Can the equipment in the synthetic process be sold for removal from the reservation, without restriction as to its use? Answer. The subject matter of the contract was in process and apparatus, and the machinery installed is not shown to fall within those classes, and no restrictions being set forth as to its use, may be sold without restriction or reservation as to its use, and the future use of the plant by the purchaser as a plant for manufacturing the subject matter embodied in any patents would, of course, be a question between the purchaser and any patentee owning processes to be used.

(4d) Can the equipment used in the synthetic ammonia process be sold for use other than for nitrogen fixation, allowing prospective buyers to inspect the plant? Answer. Inasmuch as processes covered by the contract are no longer in operation or use by the Government, the prohibition relating to the exclusion of the public is no longer applicable, and the equipment, not being the subject matter of the contract, may be sold for whatever purposes the Government may see fit.

(5a) Can operations at Sheffield be described and published? Answer. The information received by the Government from the General Chemical Co. was the subject matter of the six patents, together with the knowledge and experience of the engineering force of the chemical company. It appears that at the outset the chemical company relied on the information of their engineers, Mr. De Jahu and Mr. Schultze but after several weeks' trial these gentlemen were replaced by others who had no experience with this type of project and who met with no greater success. It would appear that at the time the contract was made there were no other plants of this type in operation in this country, and that the chemical company had merely the patents and a theoretical idea as to the means of the operation, which means were intended to be worked out at the expense of the Government. The terms upon which the contract was undertaken clearly show that it was intended as an experiment, the chemical company giving services and theory as expressed in their patents and the Government financing the proposition in addition to giving the services of its employees. The subject matter set forth in the patents can be under no injunction of secrecy, because they are as a matter of law complete publications which may be discussed and criticized at will. Under the terms of the contract the Government agreed to "exclude the public from all works in which said processes shall be employed." The process being no longer in operation, the restriction as to the public appears to be terminated. The Government did not agree to any secrecy other than this clause and is now at liberty to give such information as it chooses. As to the agreement of secrecy between the Government and its employees, the General Chemical Co., not being a party to the agreement, has no authority to claim under it.

(5b) If not, can operations be described when these operations were carried out in exact accordance with published patents, or can it be published that operations described in patents were actually used at Sheffield? Answer: As to the information received by the Government and its employees as a result of experience and experiments carried on at Nitrate Plant No. 1, the only stipulation referring to this matter in the contract is that the General Chemical Co. receives an implied license to use such information. Information thus received belongs to the Government to do with as it sees fit. The rights thus obtained by the chemical company would be necessarily restricted to an implied license to the matter which would plainly not entitle it to restrict the publication of such information by the Government.

(5c) If not, can the principles involved in these operations and described in the patents and other literature be described if no reference is made to the fact that actual operation at Sheffield was in accordance with these principles?

Answer: As to the information received as the result of the inspection of the European plants by a board of officers, any information thus obtained would be clearly outside the contract, inasmuch as it was obtained after the cessation of operations at Plant No. 1, and therefore would preclude the chemical company from any interest therein.

(5d) Can the advantages and disadvantages of certain variants from the process described in the patents be discussed, even though such variants were used at Sheffield, provided no statement is made that they were actually used? For example, a discussion of the relative merits of pressures or temperatures higher or lower than those described in the patents. Answer: In the letter of October 3, 1921, the General Chemical Co. to Maj. Burns, Ordnance Department, the writer urged that the Government, under paragraph 5 of the contract of July 14, 1917, agreed to keep the designs and processes secret. Examination of this paragraph cited shows that the Government agreed to recognize the chemical company as the sole owner of the processes under the patent, and further agreed to exclude the public from the works in which said processes shall be employed. This office can not agree with the position taken by the chemical company as to its construction of the prohibition, and, on the other hand, is of the opinion that all powers of this paragraph were terminated upon the cessation of the use of the processes.

(5e) If certain information was obtained by the Government during the operation of the Sheffield plant and was subsequently obtained from the British Ministry of Munitions or by inspection of the German synthetic ammonia plants, can this be published if no reference is made to Sheffield? Answer: Yes.

(5f) There have been researches on problems that arose at Sheffield, and others, the outgrowth of collateral researches, on problems which have arisen since the operation at Sheffield and which are entirely distinct from the operation of that plant but which might be construed to be indirectly the result of knowledge acquired during the operation at Sheffield. To what extent can the results of this research work be described and published? Answer: The contract under consideration can place no restrictions upon the Government as to disclosure of information resulting from its independent researches, even though the original reason for such research arose out of operations at Sheffield, and the publication of such information is purely a matter of departmental determination as the interests of the Government may appear.

J. A. HULL,
Acting Judge Advocate General.

The CHAIRMAN. Col. Hull, were you present before the committee, or in the committee room, when Gen. Williams stated that in his opinion there was a moral obligation on the part of the Government to recognize the validity of the Alabama Power contract?

Col. HULL. Yes, sir.

The CHAIRMAN. What do you think about that moral obligation?

Col. HULL. Ordinarily, I am strictly in favor of the Government carrying out its contracts that are duly entered into, notwithstanding that the officer, in the time of emergency, exceeded his powers. But in this contract I notice it is a cost-plus contract. It is a long contract that bears many evidences of having been very carefully prepared by the attorneys for the company, and they have provided several very remarkable things, namely, the construction of a power-transmission line and power plant at the expense of the United States, but at the same time providing that the company takes the real estate and an option. The company can not get, ordinarily, in time of war, the right of way as cheaply or as expeditiously as the Government can, and it certainly would have been a matter of ordinary business sense when they were constructing a plant and buying real estate to do it in that way. Therefore, I believe it is a proper case to leave to Congress, after a due investigation, to determine what the equities of the matter may be.

The CHAIRMAN. You are not greatly impressed, I take it, with the moral obligation?

Col. HULL. I do not know the nature of the negotiations that lead up to that contract, but they had a profit of about $285,000 on the face of the contract, for the construction.

The CHAIRMAN. For the construction of the transmission line?

Col. HULL. And the properties there which were constructed.

The CHAIRMAN. Is there anything else you want to explain to the committee regarding these contracts?

Col. HULL. The contract with Mr. Ford was prepared in my office; that is, the proposal of Mr. Ford, after an interview with Secretary Weeks. The Secretary of War and Mr. Ford wanted it expressed in a little more legal language, and it was drafted in my office. Several of my best assistants worked a couple of weeks on it with Mr. Ford's representatives to try to express Mr. Ford's idea. It was not a negotiation in my office. The contract which he sent here was the result of that drafting in the office.

The CHAIRMAN. Do you mean the signed contract of January 25, 1922?

Col. HULL. Yes, sir. But we were acting there more as a drafting agency for Mr. Ford than negotiating across the table.

Mr. Fields was asking some questions on which I might throw a little more light. If you will turn to page 15 of the contract, section 3, in regard to the flowage lands and rights, you will find the following language, after 4 per cent: "Of the actual cost of acquiring lands and flowage rights, and of completing the locks, dam, and power-house facilities (but not including expenditures and obligations incurred prior to approval of this proposal by Congress)."

Similar language was also in the draft as it left the office, in section 7, but before signing it was stricken out, which causes a certain amount of misunderstanding. I understood that what Mr. Ford was afraid of was that that would obligate him to get that land, and, being a private party, he was afraid he would have difficulty in condemnation proceedings, whereas the Government could condemn. But the omission leaves it in question, and I believe you will find that his representatives, who will appear before you next week, will clear that up to the satisfaction of the committee.

The CHAIRMAN. Of course, the experience of this committee has shown conclusively that when the Government tries to negotiate for land the value goes up enormously.

Col. HULL. Of course, it is liable to go up even still more in the case of a private individual.

The CHAIRMAN. I believe it would also go up if a very wealthy man like Mr. Ford were known to be in the market for the purchase of real estate.

Col. HULL. Of course, the Government is protected by the right of eminent domain.

The CHAIRMAN. But I find that juries generally, when you go into court on condemnation proceedings, are more apt to save the private citizen than to save the Government.

Col. HULL. I would have recommended to the Secretary of War, if funds had been available, that condemnation proceedings start at once on the Alabama Power Co. property, so that that could be completely disposed of before we attempted to sell it. But there were no funds available, so there has been no authority given to start condemnation proceedings.

There has been a great number of legal questions which have arisen around this table, and I will be willing to answer those questions as far as I can. I do not recall just what they were. What I have mentioned are the principal questions that have been in the office.

The CHAIRMAN. By the by, I heard it stated that there is a rumor around that quite a number of private corporations and private individuals own considerable land around Muscle Shoals, and that if any effort is made to secure those lands there will be a pretty big increase in the value. Have you heard anything of that kind?

Col. HULL. I have not heard anything. Those stories were likewise told in Washington when the Union Station was started, I believe.

The CHAIRMAN. Oh, yes. We have those things all over the country. What have you to say regarding this language in the Secretary's report, on page 5: "The Acting Judge Advocate General has also held that the provision contained in section 124 of the national defense act directing that the plants therein authorized be operated solely by the Government, and not in conjunction with any other industry or enterprise carried on by private capital, is applicable to the plant as a whole, and is a restraint upon its sale. This construction, if justified, would prevent the lease or rental of the plant for private operation." What have you to say in regard to that?

Col. HULL. Section 124 of the national defense act, which I read a while ago, Mr. Chairman, I think is clear and unambiguous, and consequently the Secretary of War is without power to dispose of these properties until authorized by Congress.

The CHAIRMAN. You feel that if Congress were to authorize the sale and the lease of the land involved in the Muscle Shoals plant, that would settle the whole controversy?

Col. HULL. It is entirely a question for Congress.

Mr. HULL. Colonel, you spoke of the contract with the General Chemical Co. in connection with patent rights and royalties. Is it your opinion that we are not under any obligations under that contract?

Col. HULL. That contract with the General Chemical Co. has practically terminated. That is on nitrate plant No. 1.

Mr. HULL. Would there be any on nitrate plant No. 2?

Col. HULL. On nitrate plant No. 2 we have a number of processes and patents which, under the contract we have, we could transfer, and which, under this contract with Mr. Ford, he has an option on. Whether he will take them or not depends upon his investigation. If he does take them and produces any nitrate there, under these patents he must pay a royalty.

Mr. HULL. Then, under the contract with Mr. Ford, we would have to pay that royalty. Would that money be charged against the contract with Mr. Ford?

Col. HULL. If he took over those patent rights that royalty would be a part of the cost of the nitrate and of the fertilizer which he would produce there.

Mr. HULL. If we accept this contract with Mr. Ford, does that leave us free of any contract or liability with any other company?

Col. HULL. I should say so.

Mr. HULL. You had something to do, as I understand it, with the drafting of this contract?

Col. HULL. It was drafted in the office.

Mr. HULL. Then, I presume you know something about the liability of Mr. Ford under that contract?

Col HULL. Yes sir; it has been studied.

Mr. HULL. Would he be bound to produce fertilizer under that contract, if it was found possible.

Col. HULL. As now drafted?

Mr. HULL. As now drafted he would have to produce at least——

Col. HULL (interposing). To the maximum capacity of plant No. 2.

Mr. HULL. There would not be any question about that?

Col. HULL. There is not any in my mind.

The CHAIRMAN. Under what section?

Col. HULL. Section 14.

Mr. HULL. Suppose he could not produce it; that it was found physically impossible to produce the fertilizer compound in paying quantities; what would be the result, so far as the contract with the Government goes?

Col HULL. If the Government insists, a court of equity would grant relief, and not compel the performance of the impossible.

Mr. HULL. What section of the second contract with Mr. Ford covers that?

Col. HULL. Section 14.

Mr. HULL. If it was found impossible to produce this fertilizer, I presume of course he would be enabled to take the hydroelectric power that was supposed to go into the production of the fertilizer and use it or sell it as he saw fit?

Col. HULL. Yes; but, of course, he would be obligated to maintain his laboratory and experiments and try to produce.

Mr. HULL. He would have to keep experimenting and trying to produce fertilizer?

Col. HULL. Yes, sir.

Mr. HULL. Under this contract there is nothing, as I understand it at the present time at least to guarantee the fulfillment of the contract except the personal guaranty of Henry Ford, and of course he binds his estate to carry it out. What is your opinion as to the liability of the estate? I have not any doubt about the liability of Henry Ford, but what would be the liability of the estate? Can he make his estate liable?

Col. HULL. He could make his estate liable and the estate would be bound under the existing law—that is, the estate in Michigan where he signs this contract. There are two sections of the statute in Michigan to which my attention has been called which I would like to read to you. I quote from the compiled laws of Michigan of 1915 (vol. 3, p. 4867):

"(13898) SEC. 16. If the court shall be satisfied from the report of the commissioners or by the proof exhibited, said court may order the executor or administrator to retain in his hands sufficient estate to pay such contingent claim when the same shall become absolute, or if the estate shall be insolvent sufficient to pay a proportion equal to the dividends of the other creditors."

Following a little later down you find this:

"(13905) SEC. 23. When the heirs, devisees, or legatees shall have received real or personal estate and shall be liable for any debts as mentioned in this chapter they shall be liable in proportion to the estate they may have respectively received, and the creditor may have any proper action at suit or in law or equity and shall have a right to recover his claim against a part or all of such heirs, devisees, or legatees to the amount of the estate they may have respectively received, but no such action shall be maintained unless commenced within one year from the time the claim shall be allowed or established."

Of course there is one obvious difficulty in that, and that is if he should breach the contract on a question of production of fertilizer for the Government to maintain a suit for damages it would have to show that the Government was damaged because the farmers of the country did not receive fertilizer at a cheap rate. I will leave it to the lawyers on this committee as to how difficult it would be to secure a measure of that in dollars and cents. Of course we can compel specific performance, but as long as Mr. Ford is alive I do not think that would be necessary.

Mr. HULL. Under this contract Henry Ford obligates himself and his company to start to develop certain properties down there. Unquestionably there would be considerable property that would be worth something to the Government. Would there be any question at all, or could there be any question, raised in case Henry Ford failed to carry out the contract as to whether that property would revert to the Government? That is the property he puts on our property down there.

Col. HULL. He does not contract to put any property on land that is to remain in the United States, so that anything we could hold would have to be held after judgment.

Mr. HULL. There would be more property there on which we could recover?

Col. HULL. I should say we would have to hold it after judgment, but we could not hold it otherwise.

Mr. HULL. We would have a cause for damages against the company?

Col. HULL. If there was a breach on which you could recover damages, the property of the company would be subject to execution?

Mr. HULL. I do not know whether you would care to do so——

Col. HULL (interposing). I presume your suggestion is in regard to the possibility of the insertion of a clause returning to us the properties we dispose of in case of a breach?

Mr. HULL. There is no such clause in there now.

Col. HULL. No such clause there now.

Mr. HULL. Should there be?

Col. HULL. It would be an additional protection to the United States.

Mr. HULL. They should not object to putting it in, should they?

Col. HULL. I have given it no consideration at all along that line.

Mr. HULL. Do you care to express to the committee a general conclusion in regard to this contract, anything that would be of interest to the committee?

Col. HULL. I have never given the business features of it any real consideration, except in hearing the testimony which has been given the committee.

Mr. HULL. You have heard a good deal of testimony?

Col. HULL. I have simply the information that the other members of the committee have had, and I would not consider, without further evidence, that I would be able to arrive at any definite conclusion.

Mr. JAMES. Colonel, under the contract entered into by the Alabama Power Co. with the United States, how much money was invested by the United States?

Col. HULL. About $4,676,000, I think.

Mr. JAMES. How much was invested by the Alabama Power Co.?

Col. HULL. I have no knowledge of that.

Mr. JAMES. Have you any idea what profit they made?

Col. HULL. The contract provided for $60,000 for overhead; also 6 per cent profit on the expenditure, with a limit of $225,000.

Mr. JAMES. Under the contract between the United States and the Air Nitrates Corporation, how much money was invested by the United States?

Col. HULL. The total cost was $69,000,000, approximately $70,000,000.

Mr. JAMES. How much money did the Air Nitrates Corporation invest?

Col. HULL. It was a cost-plus contract.

Mr. JAMES. At what rate?

Col. HULL. Article 10 of the contract of the American Air Nitrates Corporation with the United States provides:

"*Costs and expenses—Audit and payment thereof.*—The United States shall bear all costs and expenses of every character and description incurred or made in connection with the planning, construction, equipment, and operation of each of the said plants or any part thereof, and in the conduct of any other business or activities of the agent hereunder; and the United States shall supply all money necessary therefor in such amounts and in such manner as to permit all of the agent's activities with respect to the planning, construction, equipment, and operation of the plants to proceed without delays or interruptions and without the necessity of the agent providing any capital or borrowing any moneys. Vouchers for all accounts payable shall from time to time be furnished to the Chief of Ordnance, and upon presentation of satisfactory evidence he shall either furnish the agent funds to the amounts thereof, which funds shall be immediately paid out by the agent under the supervision of a representative of the Chief of Ordnance, or the vouchers may be paid direct by the Chief of Ordnance to the persons entitled to payment thereunder. Such vouchers shall be acted upon by the Chief of Ordnance promptly.

"All accounts payable by the United States hereunder, including those in relation to costs and expenses of construction or operation, shall be subject to audit by the United States, which shall maintain at the plants and elsewhere, if necessary, a sufficient number of auditors promptly to audit the same.

"To expedite payments to the agent the United States shall detail representatives at each of the said plants and at the agent's home office, with power and sufficient funds to discharge the pay rolls and to make any other payments as they shall become due hereunder. Payments by the United States shall be subject to correction for errors, if any.

"The agent shall make no charge to the United States for the following things:

"1. For procuring from the American Cyanamid Co. a license to it as agent of the United States to use the said company's patents and processes.

"2. For procuring from the American Cyanamid Co. the disposal, for purposes of the Air Nitrates Corporation, of the said company's experiences, records, and plans appertaining to the production of the said chemicals hereinabove referred to.

"3. For procuring from the American Cyanamid Co. the disposal, for the purposes of the Air Nitrates Corporation, of the following members of the said company's executive and technical force, namely, the President, vice president and general manager, sales and traffic manager, engineering assistant to general manager, superintendent of manufacture, chief technologist, chief engineer, assistant engineer, and, in addition thereto, in connection with the operation of the said plants, two principal works managers, as such offices may from time to time be filled.

"4. For procuring from the American Cyanamid Co. the disposal, for the purposes of the Air Nitrates Corporation, of all of the said company's plants for the purpose of training superintendents, foremen, and chief operatives."

Article XI provides:

"*Agent's compensation.*—As full compensation for the services of the agent the United States shall pay to the agent the following fees:

"1. *Construction fee.*—Three and one-third (3⅓) per cent of the cost in connection with the construction and equipment of the said plants, until such cost (exclusive of the agent's compensation) shall equal thirty million (30,000,000) dollars, and thereafter one and two-thirds (1⅔) per cent of such cost in excess of said thirty million (30,000,000) dollars. Said fee shall be payable monthly upon that portion of the cost for which payment has been made during the month or months preceding and as to which the fee is unpaid. There shall be credited on account of said construction fee any payments for construction compensation heretofore made to the agent under the provisions of said contract of November 16, 1917. The total of the construction fee shall not exceed one million five hundred thousand (1,500,000) dollars.

"2. *Operation fee.*—One-quarter of one cent ($0.0025) per pound of ammonium nitrate produced in compliance with Article VII hereof and accepted or utilized by the United States, up to and including 110,000 tons produced in any fiscal year of the United States, and one-eighth of one cent ($0.00125) per pound of ammonium nitrate so produced and accepted or utilized in any fiscal year in excess of such 110,000 tons. Payment shall be made monthly.

"The Chief of Ordnance may direct the agent to produce, at any one or more of said plants, products other than ammonium nitrate, and to the extent that

such products are not utilized in the making of ammonium nitrate in any of said plants operated by the agent the agent shall receive as compensation for making such products an operation fee computed upon such a basis as will give the agent for making such products the same amount as the agent, by way of operation fee, would have received (1) where such products are nitrogenous compounds, for fixing an equivalent amount of nitrogen in the form of ammonium nitrate; and (2) where such products are other than nitrogenous compounds, for making ammonium nitrate equivalent in cost to that of such products."

Mr. JAMES. Is Lieut. Col. William Williams still in the Army?

Col. HULL. No, sir; I think not.

Mr. JAMES. Do you know what his present business is?

Col. HULL. I am informed that he is living in New York and just recently left for the Orient.

Mr. JAMES. Do you know what his business is?

Col. HULL. I do not.

Mr. JAMES. Is Lieut. Col. Samuel McRoberts still in the Army?

Col. HULL. No, sir.

Mr. JAMES. Do you know what business he is in?

Col. HULL. He is in the National City Bank, I believe.

Mr. JAMES. He is a banker?

Col. HULL. Yes, sir.

Mr. JAMES. I understood you to say that Lieut. Col. Williams, who signed this contract on behalf of the United States with the Alabama Power Co., and Lieut. Col. McRoberts, who signed the contract on behalf of the United States with the Air Nitrates Corporation, are out of the Army?

Col. HULL. Yes, sir.

Mr. KEARNS. Colonel, do you know what the capital stock of the Air Nitrates Corporation amounted to? Is it not true that that was a company composed of 10 men and each one put $100 into the organization?

Col. HULL. I have so heard, but I have never looked into that matter.

Mr. KEARNS. If this was a company composed of 10 men, each putting in the company $100, making the capital stock $1,000, what business or activity could they have that the Government would want to buy?

Col. HULL. Possibly the relationship of the Air Nitrates Corporation with the parent company, the American Cyanamid Co., might explain why they made a separate company for the purpose of the contract.

Mr. KEARNS. I have been told—I do not know how true it is—that these 10 men got from the Government or got from some one, something over $2,000,000 on a capital stock of $1,000 out of this project at Muscle Shoals. Is that true?

Col. HULL. I do not know. I have heard a great many stories on both sides of that, but I have never had occasion to go into it officially.

Mr. KEARNS. I was wondering how a company with a capital stock of $1,000 could furnish the Government anything in the way of materials that would be worth over $2,000,000. Do you know of any service that they have rendered to the Government that would justify a payment of $2,000,000?

Col. HULL. I do not know enough about the business to pass any intelligent judgment on that at this time. I could imagine a condition—for instance, if you take the 10 leading men of the United States Steel Corporation and they would start a small corporation for the purpose of helping us out in the construction of steel for a couple of years; their experience might be worth a good deal, considering Mr. Carnegie's old statement that he did not care whether his mills burned down as long as he had his personnel.

Mr. MILLER. Colonel, under section 15 of this contract, which might be called the advertising section of it, you find this peculiar language: "In order that the farmers may be supplied with fertilizers at fair prices and without excessive profits, the company agrees that the maximum net profit which it shall make in the manufacture and sale of fertilizer products at nitrate plant No. 2 shall not exceed 8 per cent of the actual annual cost of production thereof. In order that this provision may be carried out, the company agrees to the creation of a board of not more than nine voting members, chosen as follows: The three (3) leading representative farm organizations, national in fact, namely: The American Farm Bureau Federation, the National Grange, the Farmers Education and Cooperative Union of America (or their successors) shall each designate not more than seven (7) candidates for said board. The President shall nominate for membership on this board not more than seven (7) of these candidates, selected to give representation to each of the above-mentioned organizations, said nominations to be made subject to confirmation by the Senate, and there shall be two voting members of said board selected by the company. A representative of the Bureau of Markets, Department of Agriculture (or its legal successor), to be appointed by the President, shall also be a member of the board serving in an advisory capacity without the right to vote. The said board shall determine what has been the cost of manufacture and sale of fertilizer products and the price which has been charged therefor, and if necessary for the purpose of limiting the annual profit to 8 per cent (8 per cent) as aforesaid, shall regulate the price at which said fertilizer may be sold by the company. For these purposes said board shall have access to the books and records of the company at any reasonable time. The said board shall also determine the equitable territorial distribution of fertilizer products produced at nitrate plant No. 2. If and when said board can not agree upon its findings and determinations, then the points of disagreement shall be referred to the Federal Trade Commission (or its legal successor) for arbitration and settlement, and the decision of said commission in such cases shall be final and binding upon the board."

Do you construe that section of the contract to mean that Mr. Ford is obligated to follow his product until it reaches the farmer?

Col. HULL. No, sir.

Mr. MILLER. Then, that is idle phraseology in the contract?

Col. HULL. No; it limits the profit of the manufacturer but not the profit of the middleman.

Mr. MILLER. I am asking you, Colonel, whether that makes it obligatory on Mr. Ford or upon his company to follow their manufactured product until it reaches the hands of the farmer?

Col. HULL. I believe it would be left entirely to the discretion of the board, and that you could not force anything by the terms of this contract.

Mr. MILLER. What board do you speak of?

Col. HULL. The board provided for in section 15.

Mr. MILLER. Then, that is of no more binding force upon Mr. Ford than phraseology something like this: "In order that commercial fertilizer may be made at fair prices, without excessive profits, the company agrees that the maximum net profit which it shall make out of the manufacture and sale of fertilizer and fertilizer products at nitrate plant No. 2 shall not exceed 8 per cent per annum."

Col. HULL. On the actual cost of production. You are just changing the preamble.

Mr. MILLER. I have left out that portion of the phraseology in here, "in order that farmers may be supplied."

Col. HULL. Yes.

Mr. MILLER. It means nothing more than if the word "farmers" was not in there.

Col. HULL. It is a declaration only.

Mr. MILLER. Now, Colonel, read section 15, where it makes use of the language, "In order that farmers may be supplied with fertilizer," and see if that is substantially the same language that is repeated in section 17 of Mr. Ford's offer, which reads in this way:

"In order that said company may be supplied with electric power and the farmers with fertilizers after the termination of the said 100-year leases, should the United States elect not to operate said power plants," does not this contract convey all the way through it that Mr. Ford's product shall be sold directly to the farmer, and that he shall follow his product until it reaches the hands of the farmer?

Col. HULL. I understand that that clause, 15, was prepared by some farm organization and inserted almost in the words that they asked.

Mr. MILLER. What farm organization was that?

Col. HULL. I think they were the ones that were named in the clause, the American Farm Bureau Federation, the National Grange, and the Farmers' Educational and Cooperative Union of America.

Mr. MILLER. I am reading from this contract.

Col. HULL. I am reading from the contract, too. They are mentioned in paragraph 15. Their representatives drafted that clause and it was put in in that way. I see your point. I should say that under the terms of the contract, as far as the Government and Mr. Ford are concerned, it limits it only to the price to the manufacturer and does not provide that the Government should control how it should be disposed of to the farmer or to other industries

Mr. MILLER. There is no effort in here to have the Government do anything. Mr. Ford is to do it all, or rather Mr. Ford's company, and what I am getting at is this, does Mr. Ford or his company obligate himself to get this manufactured product, which is commercial fertilizer, into the hands of the farmer?

Col. HULL. Not to the United States. It does not so obligate itself in this contract.

Mr. MILLER. Then Mr. Ford, after he manufactured his fertilizer, could dispose of it to anyone?

Col. HULL. Subject to the control of the board which is here set up.

Mr. MILLER. He could sell it to a purchasing concern or sell it through any other means that he might organize or anyone might organize to take the output of his factory?

Col. HULL. Yes, sir.

Mr. MILLER. And all the limitations that he and his purchaser would be under would be that Mr. Ford's profit should not exceed 8 per cent?

Col. HULL. Yes, sir.

Mr. MILLER. Then it would be possible under this contract, so far as the immediate effect to the farmer is concerned, for his product to go through one or more hands before it reaches the farmers?

Col. HULL. Yes, sir.

Mr. MILLER. And each one could take his slice out of the profits, but Mr. Ford himself could not get more than 8 per cent?

Col. HULL. That is correct. The matter is covered by the creation of a board to control.

Mr. MILLER. They control the profit Mr. Ford is to get, do they not?

Col. HULL. They control the price.

Mr. MILLER. I understand that. I have read the section about the board, and what I am getting at is that Mr. Ford shall not make over 8 per cent out of his commercial fertilizer, but after it gets beyond Mr. Ford's hands, suppose some one should organize a purchasing corporation and purchase Mr. Ford's output, what is there standing between that company and the farmer?

Col. HULL. The right of the board to determine the equitable territorial distribution of fertilizer products at nitrate plant No. 2.

Mr. MILLER. Suppose that your board should distribute, let us say, so much of this product to the State of North Carolina and so much to the State of Tennessee and so much to Kentucky and to other States or other lesser divisions than a State and say that they are entitled to so much of this output, your board can control the quantity produced for each one of those localities, but what check has it on the price that the farmer shall pay in each one of those localities?

Col. HULL. None.

Mr. MILLER. None whatever, has it?

Col. HULL. Not that I can see.

Mr. MILLER. In other words, there is nothing in this contract, Colonel, that controls the price of fertilizer as it shall reach the farmer, and that is what we are after in this matter; that is the whole undertaking, to get cheap fertilizer into the hands of the farmer. Now, would it not be salutary in this case—I am in deep sympathy with cheap fertilizer and I will go the limit to get cheap fertilizer to the farmer, but should there not be some clause in this contract by which Mr. Ford or his company have control of this product until it shall reach the very hands of the people who will consume the product, if we want to safeguard it and get a cheap fertilizer to the farmers?

Col. HULL. All I can say as to that is that the farm organizations that were primarily concerned did not have any fear of that kind.

Mr. MILLER. That is true, but there will be many farm organizations come and go.

Col. HULL. After you have raised the question, they are more concerned with it——

Mr. MILLER (interposing). This is a 100-year contract, and many farm organizations will come and go like the bubbles on the waters, just as they have in the last 50 years, or 20 years, or 10 years, and we are dealing here with something that is almost in perpetuity, five generations ahead of us, and if we are going to do anything, which is our earnest endeavor, to increase the productiveness of the soil and help the farmer, should we not have something of a permanent character in this contract rather than to leave it to the associations of farm organizations, as they come and go every year, dealing with this matter?

Col. HULL. Any clause of that kind, I believe, would be acceptable to the representatives of the company that will appear before you next week, if it can be so drafted.

Mr. MILLER. Was there any suggestion of a clause of that character in your draft?

Col. HULL. No, sir. This clause was not drafted in the office. It was adopted.

Mr. MILLER. We have a clause that will insure to the farmer the production of this plant at not to exceed 8 per cent profit to the manufacturer at the works. We have that safeguarded in this contract. Now, from there on, until it reaches the farmer, there is nothing here in this contract, and what I was thinking of was some clause by which it shall reach the hands of the farmers at a fair and reasonable price.

Col. HULL. If a fair clause of that kind could be drafted, I believe that the insertion of such a reservation would not meet with opposition. Of course, you can find that out next week.

Mr. MILLER. What I am alarmed about in this contract, and I am frank to say it right now, is that if the production of fertilizer in Mr. Ford's enterprise or his company's enterprise should become a formidable competitor with the very substantial interests now engaged in the sale of fertilizer, a purchasing company may be organized for the purpose of purchasing the output of this factory and get hold of that output, even though distributed in zones as the contract calls for; because this board has no control over prices. We want to keep that in our minds clearly. They could purchase the output of this factory, husband it, and dispense it as they pleased, or send it to these zones, just as they pleased, and put the prices to the farmer up equal to what Mr. Commercial Fertilizerman gets for his fertilizer now.

Col. HULL. If a clause of that kind can not be drafted, I should imagine that a criminal statute could be drafted that would meet such a condition.

Mr. MILLER. Under what law have you in mind that a criminal statute could be so drawn?

Col. HULL. The interstate commerce clause.

Mr. MILLER. Does that control the price of anything? Take, for instance, the 10 men who organized this Air Nitrates Corporation, which is probably a subsidiary corporation. I think it would be wise to safeguard these things, because what we are deeply concerned in and what I think we are all in sympathy with is that if the Government embarks on this enterprise and puts in this enormous sum of money, $50,000,000 in addition to the $105,000,000 and over that it has now invested there, making in round numbers $160,000,000 that the Government has put in these plants, we are deeply concerned that the agricultural interests shall get the benefit of this whole thing, and that some cunning and clever manipulating company shall not get this thing in a condition so that they can control ultimately the output of this enterprise and set the price.

Col. HULL. That is the first time that idea has been expressed.

Mr. MILLER. It occurred to me from an examination of the contract. I have not had the time to devote as much time as I would like to it.

Col. HULL. If it had arisen it would have been more fully covered, I have no doubt, in this contract.

Mr. MILLER. I think it is very, very important.

Mr. PARKER. Col. Hull, if it should turn out to cost more to manufacture sulphate of ammonia at this plant than the market price at which sulphate of ammonia is produced and sold by others, would the manufacture go on; is there anything to insure that it would go on?

Col. HULL. Only as found in section 14. He obligates himself to manufacture at maximum capacity barring strikes and other causes.

Mr. PARKER. And other unforeseen causes, is it not?

Col. HULL. Other causes beyond his control.

Mr. PARKER. Is not the price of the market beyond his control?

Col. HULL. I should say that would come under the ejusdem generis rule, and the price would not be one of the causes.

Mr. PARKER. Do you think he would have to manufacture at a loss and sell it at a loss if he could not make it for the price at which it was sold on the market?

Col. HULL. One construction of that clause would do it, whether you could compel it or not.

Mr. PARKER. At any rate, it is a matter of doubt?

Col. HULL. It would be a serious matter of doubt.

Mr. PARKER. Then it is a serious matter of doubt whether he would have to go on and have to dispose of the goods at a loss if the market price was below what he could make it for?

Col. HULL. He would have to do it unless relieved either by Congress or a court of equity.

Mr. PARKER. But is says, "other cause beyond his control," and the price of the goods on the market would be beyond his control?

Col. HULL. As I said, in my judgment, the courts would not hold that price would be "other causes beyond his control."

Mr. PARKER. You think not?

Col. HULL. No, sir.

Mr. PARKER. But it is a serious matter of doubt, anyhow?

Col. HULL. No; I should say that the difficulty would have to be somewhat of a nature of those already specified.

Mr. PARKER. You think, then, he would be bound to go ahead and manufacture at a loss, under this contract, and sell at a loss, no matter how low the price of commercial sulphate of ammonia might be on the market?

Col. HULL. Unless relieved by a court of equity or by Congress. That is his obligation as it is written.

Mr. PARKER. This contract is simply a contract, is it not? It is not a mortgage or anything of that sort, but is a contract to manufacture?

Col. HULL. Yes, sir.

Mr. PARKER. Under clause 13 he is to get a deed for all this property, including the nitrate works, free and unencumbered, is he not?

Col. HULL. Yes, sir.

Mr. PARKER. He could then mortgage it to raise money?

Col. HULL. Yes, sir.

Mr. PARKER. That would create a lien on the property?

Col. HULL. Yes, sir.

Mr. PARKER. And that would be paramount to any mere contracts that he had made?

Col. HULL. Probably, without a reservation in the deed.

Mr. PARKER. So that unless there is a reservation in the deed, which is not provided for in this contract here, he could mortgage the whole plant for millions of dollars, as big companies do, and that would be prior to the obligations of this contract or the lien of this contract?

Col. HULL. The contract being made in the nature of a statute, the mortgagor would be bound by a knowledge of the terms of this contract.

Mr. PARKER. But this contract is very specific, that he shall get a title which is free and unencumbered, and that means free and unencumbered of anything and ready to mortgage.

It is a pretty easy matter to get up a strike by lowering wages, it is not?

Col. HULL. I think the committee has had very wide experience and is perfectly competent to judge that.

Mr. PARKER. If Mr. Ford lowered wages, he would have a strike and would be perfectly protected under this strike clause, would he not?

Col. HULL. I doubt it. A man can seldom profit by his own wrongs.

Mr. PARKER. But how can you find out that it is his own wrong, if he says that he has to lower them in order to meet market prices?

Col. HULL. I think both the points you are making are well worth discussion.

Mr. PARKER. That is what I think, and that is all I want to ask about that. I will now pass to the Alabama contract. Have you that contract with you? I have not seen it and I do not think it has been read and I want to look at it.

Col. HULL. Yes, sir.

Mr. PARKER. This Alabama Power Co. contract was one for the construction of a power plant and transmission line, was it not?

Col. HULL. Yes, sir; there are four or five projects. I have forgotten now exactly how many projects were combined in that one contract.

Mr. PARKER. Did some of these lands on which this was done already belong to the Alabama Power Co.?

Col. HULL. I think one parcel belonged to them.

Mr. PARKER. Was the one on which the power plant was built?

Col. HULL. Yes, sir.

Mr. PARKER. And that is the important one where almost all the money was spent, on their own lands.

Col. HULL. I do not know as to that.

Mr. PARKER. Is not the parcel on which most of the money was spent? It certainly can not be true that the transmission line cost more than the construction of the plant.

Col. HULL. Looking at page 20 of the Secretary's letter we find that the generating plants (Warrior) cost $3,300,000; Warrior substation, $384,000; Drifton railroad, $90,000; Warrior-Muscle Shoals transmission line, $905,000, so that the great percentage of the expenditure was made on the lands which I understand they already owned.

Mr. PARKER. Were the other lands that were bought paid for by the United States or were they paid for by the company?

Col. HULL. I understand that under the terms of the contract they were paid for by the company.

Mr. PARKER. The United States did not pay for the other lands, then?

Col. HULL. I presume not, sir. If it did, we would own them.

Mr. PARKER. I want to know whether they paid for them or not.

Col. HULL. Under the terms of the contract they were to be purchased by the company at their expense.

Mr. PARKER. At their own expense?

Col. HULL. Yes, sir.

Mr. PARKER. So that this was a contract then to place a lot of transmission lines and power plants on lands owned or to be owned and bought by the company at their own expense?

Col. HULL. Yes, sir.

Mr. PARKER. That contract, I understand you to hold, is void because of illegality so that it can not be enforced by either party against the other.

Col. HULL. I hold that the clause in the contract that provides for the option to purchase is void for lack of authority.

Mr. PARKER. That clause, however, is part of the essential consideration of the contract or part of the consideration, and would therefore render the whole contract void. It is an essential part of the contract, is it not?

Col. HULL. I do not think so.

Mr. PARKER. It is a part of the consideration which the United States was to pay this company, is it not?

Col. HULL. The rest of it has been executed.

Mr. PARKER. If the United States had put it in this form: "The United States agrees with the Alabama company that they shall have the right to use the Alabama company's lands during the war and during the need for it," putting on what property they pleased for which the Alabama company would pay them when they ceased using these improvements, that would be in the nature of a lease or a contract for something to be done on another person's land, limited in time, and in spite of the part which provides for a sale of these improvements, that was the substantial agreement, was it not, that the United States should have the right to put improvements in the nature of power plants and transmission lines on the Alabama Power Co.'s lands and get the use of those things during the war, and when they gave us that use, which they were bound to do and which the other company was bound to ask them to do, the company should pay them the value of those improvements; is not that substantially the contract?

Col. HULL. That is not the form in which it was written.

Mr. PARKER. Certainly, it was not, but nevertheless is not that the substance of the contract?

Col. HULL. I doubt it.

Mr. PARKER. It is a matter of doubt?

Col. HULL. I doubt it. I think the company drafted the contract so they would have more rights than that.

Mr. PARKER. Let me ask you another question: If that contract is void and the parties therefore have to stand in statu quo, both being wrongdoers in an illegal contract, all these improvements having been made on the other man's land would be fixtures which would go to the other man. They are fixtures, are they not?

Col. HULL. They are fixtures, but I do not believe your construction is correct, sir.

Mr. PARKER. You do not think the whole contract is void?

Col. HULL. No.

Mr. PARKER. Have you authority for that? I think the cases are very strong, as I look at them, that wherever a material part of the consideration is illegal, the whole contract becomes illegal.

Col. HULL. I think I could find plenty of authorities upon the facts as we have them here.

Mr. PARKER. Now, may I see the other contract with the Air Nitrates Corporation?

Col. HULL. Yes, sir. I might call your attention, on the question of whether this was part and parcel of the consideration, that there was a limit on the compensation which was reached, as I understand it.

Mr. PARKER. Yes; on the compensation, but consideration for putting property on another person's land to which they expected to keep the title and not convey it, and which by being annexed to the land becomes theirs, is another proposition. It was understood that they should not take these improvements without paying the fair value, and that does not seem to me a very unfair contract, but I do not know what the courts would say. Does it seem to you to be doubtful about its being a fair contract?

Col. HULL. We have a number of those, and so far we have not got hurt.

Mr. PARKER. I now pass to the Air Nitrates Corporation contract; did that cover both No. 1 and No. 2, or only No. 2.

Col. HULL. Only No. 2.

Mr. PARKER. In that contract, on the other hand, the improvements and work were upon lands which belonged or were to be acquired by the United States.

Col. HULL. Yes, sir.

Mr. PARKER. It is not in the same position, therefore, as the other contract?

Col. HULL. No, sir.

Mr. PARKER. And the article is not an absolute agreement that the owner of the land shall pay the value of the improvements, but is simply an option, in the nature of an ordinary option, by which they have a right to bid at any sale.

Col. HULL. Yes, sir.

Mr. PARKER. And it is not half as strong an agreement for that reason.

Col. HULL. It is in a different form.

Mr. PARKER. It is just an option, and I think those options are always regarded with some hesitation by the law and are rather strictly considered so as not to prevent fair sales.

Col. HULL. You could strike that out of that contract without mutilating the contract in any way, shape, or form.

Mr. CROWTHER. Colonel, not being a lawyer, I do not intend to interpose any legal questions at this time, but, of course, this will come before the Congress and is before the country absolutely as a fertilizer proposition. That is the propaganda that is being spread all over the Nation, and that is the pressure that will be brought to bear upon Members of Congress.

Now, we have heard with a great deal of interest the discussion regarding the development of hydroelectric power, which, I think, is very pertinent and which is a very important subject, especially to the people in that vicinity and within four or five hundred miles of Muscle Shoals. But I do not find anywhere in this contract that Mr. Ford agrees to produce fertilizer. He agrees to run plant No. 2 at its capacity of 110,000 tons a year of ammonium nitrate which, by the sulphuric process is afterwards changed to ammonium sulphate. which is one of the principal ingredients in fertilizer. But nowhere do I find that he is to make fertilizer. That is one of the very small parts of fertilizer, as it is used now.

Is there any other provision in the contract which provides that he will erect other plants where he will make the base, and, as Mr. Miller suggested, participate in the direct communication to the farmer of the product which has been so much talked about, that is, participate in the distribution? I do not find anything in the contract under which they are going to make it at all.

Col. HULL. Only as set forth in paragraph 14.

Mr. CROWTHER. I read that one, and it provides for the production of nitrogen and other fertilizer compounds.

Col. HULL. Yes, sir.

Mr. CROWTHER. Nitrogen has to be changed into ammonium sulphate. They produce the original ammonium nitrate, with which some of us are more or less familiar, and then it is changed by the sulphuric process to sulphate, and that is what is used principally in the fertilizer compound. But I do not see any provision for the manufacture of fertilizer.

The great general populace all over the country imagine that by some system or other there is to be erected along the shores of this river plants in which they are going to employ a million men, and that they are going to have some

big air tunnels fitted up with some sort of rotary wheels, and they are going to put in the raw materials at one end and shoot it out at the other end as fertilizer. That is the propaganda which is being issued among the farm bureaus and granges, where they meet every week, and that is the proposition we are going to be up against. But I do not think there is any provision in this offer by which he agrees absolutely to make fertilizer.

Do you say that section 14 is the only place where there is any suggestion of that kind?

Col. HULL. Yes, sir.

Mr. CROWTHER. That provides for the production of nitrogen and other fertilizer compounds?

Col. HULL. Yes.

Mr. CROWTHER. Then I think there ought to be something in this contract before you include Mr. Miller's section, something suggested as to this being routed at a reasonable cost to the farmer. We ought to put in something that will provide for the production of it before we provide for its distribution, that the other ingredients shall be furnished to make at this plant a commercial fertilizer that these trade organizations shall have such authority as given here for its distribution, and that there shall be territorial equality as regards the distribution. It is a fertilizer proposition, and as such is before the whole country. People are talking about it all over the country as that sort of a proposition. There are a great many people making fertilizers. The people who make fertilizer buy their nitrates from Chile, or wherever they can buy them in different parts of the country.

Then there are some factories in the South which use crushed cotton seed to make fertilizer. There are many things used as a base. I do not find, as I said before, anything in this contract providing that Henry Ford is to produce fertilizer, but he is simply to produce one of its component parts, known as ammonium nitrate.

Mr. WURZBACH. Colonel, I think you agree with Gen. Beach on the construction of the proposition with reference to the acquisition of land and flowage rights on Dam No. 3, that that means that the Government will acquire that, but that it will be added to the cost of construction of Dam No. 3.

Col. HULL. I think that can be easily arranged next week when we get Mr. Ford's rpresentative here. The question arises now in connection with the exact language in view of the fact that the language was in and was stricken out before the contract was signed, and it raises a question as to just what is the effect of such omission.

Mr. WURZBACH. You do not think it is inconsistent?

Col. HULL. It can be made perfectly clear without the slightest difficulty.

Mr. WURZBACH. Section 19 of Mr. Ford's offer says that "the above proposals are submitted for acceptance as a whole and not in part." Your office assisted in the preparation of this offer. Was that language intended to convey, and does that mean that no modifications or amplifications of this offer will be made by Mr. Ford?

Col. HULL. I would prefer that you ask that question of his representative.

Mr. WURZBACH. The section reads further, "Upon acceptance, the promises, undertakings, and obligations shall be binding upon the United States, and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors and assigns; and all the necessary contracts, leases, deeds, and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed and delivered by the respective parties above mentioned."

Do you not think that language in its very terms contemplates that this is not the final offer, but that the details of the offer will be worked out during the hearings, or before the end of the hearings, or, if the offer is accepted by the Government, in the preparation of the contracts themselves?

Col. HULL. That depends upon the legislative enactment, if any, and the wording of it. If you were to pass legislation providing for the acceptance of this contract as it is there would be no necessity of further papers between the United States and Mr. Ford in carrying out this contract. We would have certain papers to execute and deliver to carry out the congressional mandate, and his company when organized would have to sign some papers binding the company to carry out these ideas. But this document under certain circumstances, for instance, by acceptance, would stand as a contract between the United States and Henry Ford.

Mr. WURZBACH. For instance, in the matter of security given the Government, a guarantee for the performance of Mr. Ford's obligations as contained in this offer, you anticipate that there will have to be further contracts written in order to secure the Government?

Col. HULL. If you have additional security; yes, sir.

Mr. WURZBACH. What security has the Government under the present offer, if accepted merely by a blank acceptance?

Col. HULL. Mr. Ford obligates his estate, and the company when organized.

Mr. WURZBACH. Do you mean to say his estate would be held liable during the course of 100 years?

Col. HULL. The estate would probably be promptly wound up. You should have some breach of the contract or some fixing of the responsibility of the estate before then. If the breach might occur long afterwards practically the Government would be without protection except the value of the corporation.

Mr. WURZBACH. The estate would probably be divided within 5 or 10 years after Mr. Ford's death.

Col. HULL. Unless the Government intervened.

Mr. WURZBACH. If there had been no breach up to this time of the partition of his estate, under the terms of this contract the Government would not have the right to prevent the distribution of that estate?

Col. HULL. Unless we can show we were liable to be harmed.

Mr. WURZBATH. Assuming everything went along in proper course up to that time, what security would the Government have, under the terms of section 19.

Col. HULL. The company would be held.

Mr. WURZBACH. All of the property that Mr. Ford acquires for the $5,000,000, except nitrate plant No. 2, which he holds for certain purposes for the benefit of the Government—all of that other property he could dispose of, not only mortgage as was suggested, but he could sell it, or give it away?

Col. HULL. Yes; but, outside of plant No. 2, I think the salvage value of that to-day is not $5,000,000.

Mr. WURZBACH. It is worth more than that, is it not? The salvage value is over $8,000,000, and, according to the testimony of Gen. Williams, could be made worth a little over $16,000,000.

Col. HULL. Does that not include plant No. 2? He can not dispose of plant No. 2, and that is supposed to be worth $7,000,000 of the $8,000.000. So the property he can dispose of, which he gets for $5,000,000, is worth much less than $8,000,000, about which you have been talking.

Mr. WURZBACH. He could dispose of that, outside of nitrate plant No. 2, could he not?

Col. HULL. He could dispose of that, outside of No. 2; yes.

Mr. WURZBACH. All of the property he acquired except nitrate plant No. 2?

Col. HULL. Yes.

Mr. WURZBACH. What other property would he necessarily have that belonged to him that he could not give as security, or as a guaranty of the performance of this agreement?

Col. HULL. Of course, during his life, everything he owns.

Mr. WURZBACH. I mean what must he place upon this particular property he is offering to lease and purchase?

Col. HULL. Under the terms of this contract?

Mr. WURZBACH. Yes.

Col. HULL. Nothing, specifically under the terms of the contract.

Mr. WURZBACH. Do you not think that by the wording of section 19 it was clearly Mr. Ford's intention to give some other kind of security to the Government to guarantee the performance of his obligation?

Col. HULL. I do not think so.

Mr. WURZBACH. You referred to the laws of Michigan a while ago on this point of security. Do you think the laws of Michigan would control in a question of the measure of damages in a suit the Government might bring against Mr. Ford for breach of his contract?

Col. HULL. It depends on the nature of the breach.

Mr. WURZBACH. For instance, failure to pay the 4 per cent rental; do you think the laws of Michigan would control in that matter?

Col. HULL. They are very important when you come to discuss what you can do against the estate or the administration of Henry Ford's estate. That is the reason I looked up the laws of Michigan.

Mr. WURZBACH. That would only be with reference to his personal estate.

Col. HULL. His personal liability on a contract signed in Michigan.

Mr. FIELDS. Colonel, just what did Mr. Ford say about his obligations, or about binding him up, if he said anything?

Col. HULL. He did not say anything to me.

Mr. FIELDS. He did not make any statement that you know of to any officer to bind him up as tight as they cared to?

Col. HULL. Not that I know of. This was drafted by the office with the idea to bind him as tight as he could be bound, probably.

Mr. FIELDS. He might have said to some other officer, "Bind me as tight as possible," without your knowledge, might he not?

Col. HULL. No. I think the officers would have reported that to me without any delay.

Mr. FIELDS. What additional advantage would the Government have should they require Mr. Ford to give a bond, beyond the conditions in the present proposed contract?

Col. HULL. The bond would probably extend beyond the life of Mr. Ford and should provide for liquidated damages. I want to call your attention to this, that the Government has a very serious burden in a lawsuit to prove that not doing something for the farmer would cause a monetary loss to the Government of the United States.

Mr. FIELDS. If the Government recovered from a bonding company, it would have to establish its claim?

Col. HULL. It would have to be in the nature of liquidated damages.

Mr. FIELDS. It would have to establish its claim?

Col. HULL. If it was drafted in the shape of liquidated damages, only the default need be established.

Mr. FIELDS. During the lifetime of Mr. Ford, or so long as his estate is held intact, any damages that might attach against him would be secured?

Col. HULL. This clause would secure the Government on anything we could establish.

Mr. FIELDS. And any estate that the company might own would after that time secure the Government?

Col. HULL. It would probably be used; yes, sir.

Mr. FIELDS. Even during the lifetime of Mr. Ford, if a thing of that kind should occur.

Col. HULL. Yes.

Mr. FIELDS. In the nature of things Mr. Ford must do one thing right away, or the Government would have cause of action against him. He must invest a great deal of money, or his company must invest it, within the not far distant future, or the Government would have a cause of action against him for his failure to do so; is that not correct?

Col. HULL. Under what part of the contract, Mr. Fields?

Mr. FIELDS. Well, in connection with the production of the nitrate that goes into the composition of the fertilizer.

Col. HULL. I should say that under section 14 it would be incumbent upon him, within a reasonable time, without any undue delay, to start producing at No. 2. There are other clauses of the contract that do not take effect until the Government has completed the construction of dam No. 2 and then other clauses in regard to the completion of dam No. 3. But with the machinery and equipment now there, under clause 14 he is obligated to start, which means within a reasonable time—not to-morrow, or 50 years from now.

Mr. FIELDS. If he failed to do that the Government is protected by his estate?

Col. HULL. We could compel specific performance.

Mr. FIELDS. If he makes the installation necessary to do that he has quite an investment there which would also protect the Government?

Col. HULL. No; he is bound to start under this proposition without any installation.

Mr. FIELDS. He must have, according to the statement of the Secretary of War, at least a million and a half dollars in installation.

Col. HULL. I do not know as to the nature of that.

Mr. FIELDS. The plant as it now stands produces nitrates used in explosives, and it will require an additional installation of a million and half dollars, and from that up to ten million dollars to produce the nitrates for fertilizer.

Col. HULL. It would require, I think, a million and a half dollars to produce ammonium sulphate, but ammonium nitrate can also be used for fertilizer. I understand plant No. 2 is ready to produce nitrate for explosives right now, and has had a trial run of production.

Mr. FIELDS. At any rate, if Mr. Ford goes very far with improvements there he must invest a great deal of money, which will be an additional protection to the Government in the performance of his contract.

Col. HULL. Every dollar he puts in will be that much protection.

Mr. FIELDS. If he fails to make that he then forfeits his contract and his estate is subject to any damage that the Government might sustain by reason of his failure; is that not true?

Col. HULL. In general, yes.

Mr. FIELDS I would like to know if you can suggest how we can secure the information asked for by Mr. Kearns with regard to the capitalization of the Air Nitrate Corporation and the profits they made from the United States.

Col. HULL. I do not know where that information can be easily and accurately obtained.

Mr. QUIN. Colonel, this mare's nest that Mr. Miller thinks he has discovered here does not exist, does it?

Col. HULL. I will leave that question to the committee.

Mr. QUIN. This section 15 of the contract proposes to create a board of nine members, does it not; that is, nine voting members, which it specifically sets up?

Col. HULL. Yes, sir.

Mr. QUIN. These farm organizations or their successors named here are to nominate seven of the members of the board, and the President is required to send their names to the Senate, and they are to be confirmed by the Senate; is that not true? That is, seven out of the nine are to be farmers?

Col. HULL. Yes, sir.

Mr. QUIN. Only two of the nine are to be named by the President?

Col. HULL. Yes, sir; seven by the President and two by the company.

Mr. QUIN. Now, it is reasonable to conclude from the fact that these farm organizations drafted this themselves, that they knew what they were doing; is that not true?

Col. HULL. They thought they did.

Mr. QUIN. The language is here. These gentlemen here tried to read out of the contract the thing that Mr. Ford has in it. This board of nine members would have seven farmers on it. This board, in the language set out here, is to regulate what? The manufacture and sale of the fertilizer product and the territorial distribution of it. Mr. Crowther made a very extravagant statement about what the farmers of the United States thought was coming to them. The language that Mr. Ford puts into this contract does not bear out the extravagant statement that Mr. Crowther made. Let us read it. Section 14 says: "The company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except it be prevented by strikes, accidents, or other causes beyond its control."

What else does it provide? It says:

"To determine by research whether by means of electric-furnace methods and industrial chemistry there may be produced on a commercial scale fertilizer compounds of higher grades and at lower prices than fertilizer-using farmers have been able to obtain, and to determine whether in a broad way the application of electricity and industrial chemistry may accomplish for the agricultural industry of the country what they have economically accomplished for other industries.

"(*b*) To maintain nitrate plant No. 2 in its present state of readiness, or its equivalent, for immediate operation in the manufacture of materials necessary in time of war for the production of explosives."

Is it not a fact that that means that all the brains and efficiency of the technical minds engaged in that industry will be employed—that is, guaranteed—under Ford's name and estate for that special purpose? That is the language set out in the offer.

Col. HULL. Certainly he does not contemplate that all the men now in his employ shall be turned over to this work.

Mr. QUIN. No; but he does propose to use the best brains for that specific purpose.

Col. HULL. And also it might be well to call attention to the fact that the board provided for here is not the board of directors for the corporation.

Mr. QUIN. I understand that. It is a board formed for the control of the very things Brother Miller was complaining about. It is for the purpose of seeing that the fertilizer and the sale of it is put out at a profit of not over 8 per cent.

Mr. MILLER. If you will show me anything in that contract that provides that the sale shall be limited to the farmers, I would like to hear you read it—that is, the sale of the product of this plant.

Mr. QUIN. It provides for territorial distribution. The language set out here gives certain powers to the board, does it not?

Col. HULL. Yes, sir.

Mr. QUIN. This contract provides for an amount of fertilizer that Gen. Williams stated yesterday, although I think he made a mistake, and that it would be as much as all the farmers in the United States use to-day.

May I ask Maj. Burns a question? How much would this 110,000 tons per annum of nitrate yield in fertilizer? Have you made that calculation?

Maj. BURNS. At the present time there is being used in fertilizer approximately 80,000 of inorganic nitrogen in plant No. 2 and 40,000 tons of inorganic nitrogen are therefore bound to produce about half of the inorganic nitrogen being consumed in fertilizer.

Mr. QUIN. I believe the Secretary of War stated that it would not make over one-thirtieth of the fertilizer that is used in the country. These are the concentrated forms of fertilizer, are they not?

Col. HULL. Yes, sir.

Mr. QUIN. I do not think my friends there who have talked about fertilizer ever farmed any. Do not the farmers take these concentrated forms of fertilizer and mix them and make their own fertilizers?

Col. HULL. I do not know, sir.

Mr. QUIN. Oh, yes; that is the common custom. I did it when I was a boy. We would take acid phosphate and mix it with leaves and other component parts. We had to do that to save freight rates.

The CHAIRMAN. Mr. Quin, Col. Hull is a lawyer; he is not a farmer.

Mr. QUIN. These other two gentlemen are not farmers, and they were trying to tell about the fertilizer. A sack of phosphate weighs 200 pounds, does it not—what we call raw-bone phosphate—and there is only about 12 pounds of nitrogen in that, is there not?

Col. HULL. I never bought a pound of it in my life.

Mr. QUIN. Do you believe that these farm organizations would be crazy enough to want that sand and dirt weighing 188 pounds hauled from Muscle Shoals, Ala., to Oregon or to Mississippi or to Texas, when they could get the same results by paying the freight only on 12 pounds of the concentrated form?

Col. HULL. Hardly.

Mr. QUIN. We know they would not, and the farmers in this thing as directors know what they are doing. They know that they are getting the fertilizer they want, and they know about the territorial distribution and know that no sales agent, as Mr. Miller seemed to be afraid of, would have control of it.

The CHAIRMAN. I would suggest, Mr. Quin, that you kindly ask some questions of Col. Hull.

Mr. QUIN. There was a question raised here about the Alabama Power Co. contract. Mr. Parker suggested the unethical attitude of the United States Government repudiating that contract. I heard you read that contract, and Gen. Williams stated that he thought the Ordnance Department had attorneys who drafted that. Does it not appear from the wording of that contract that the Alabama Power Co. must have had some good lawyers standing close around?

Col. HULL. I should say they had some attorney in connection with the drafting of that contract.

Mr. QUIN. It is patent on its face that the United States was getting the smutty end of the stick, is it not? I believe in carrying out the moral obligations of this Government, but I do not believe in letting anybody put up a job on the Government, and I am not going to permit it with my vote.

Col. HULL. The Judge Advocate General's department assumes no responsibility for the wording of that contract.

Mr. QUIN. When that corporation received $285,000 in about one year's time, with Uncle Sam putting up all the money as their fee for the construction work they did there, is it not reasonable to presume that they have been well paid, even if the contract they had were not a nullity?

Col. HULL. The question whether the compensation shall be increased is one for Congress to determine.

Mr. QUIN. Of course, I do not presume there is any lawyer who would think that the War Department would have the right to bind this Government on a

contract of this nature, and I know I do not, and I practiced law 18 years before I came here.

Now, take up this contract with this air corporation, as they call it. Is there anybody who pretends that that would be legitimate after they had gotten all that money out of the Government, from a moral or legal standpoint?

Col. HULL. You mean the question as to their having an option?

Mr. QUIN. Yes; as to whether that would act legally to controvert and prevent the acceptance of the Ford proposition.

Col. HULL. I can not add much to what the Secretary said on that.

Mr. FISHER. After a careful consideration of the contracts entered into by the Government with the Air Nitrates Corporation and the Alabama Power Co., and particularly the paragraphs whereby they reserve options, can you now state, as your judgment, that the reservation of options by those corporations is not a legal obstacle to the United States Government accepting the Ford offer?

Col. HULL. That is my opinion, that the obligations there are not enforceable against the United States.

Mr. FISHER. If the Congress of the United States should decide to accept the Ford offer, has the United States the power to condemn property, the title to which is not in the United States, but upon which buildings have been constructed, which are the property of the United States.

Col. HULL. The lower courts have so held. I will call your attention to the case of U. S. *v.* Forbes, 259 Fed. 585, and on page 591 you will find the following language:

"The claim made by the defendant is that the Secretary of War has some agreement with the city of Montgomery to turn this property over to the city upon the happening of some contingency. Answering this claim, it is apparent from what has been said that the Secretary of War had a legal right to condemn the fee in this land because, in his judgment, he had determined that the fee was necessary, and Congress in its wisdom had given him the right and imposed on him the duty of making this final determination, and he has performed such duty. The United States Government when these damages are fixed and paid will own the fee in the land. What final disposition may be made of this land in 1 year, 10 years, or 100 years from now is no more concern to the defendant than any other citizen of the United States."

You might be interested in the following language. I have read it only to-day:

"Moreover, the court takes judicial notice of the laws of the United States and knows that no contract can legally exist. There is no law that confers authority upon the Secretary of War to sell any real estate, and unless such authority is positively conferred by Congress on the Secretary of War he can not carry out the alleged contract with the city of Montgomery. If the Secretary of War has entered into such a contract, it is void, and a void contract can be of no avail to the defendant."

I might say that a similar case arose in the Federal court at Little Rock, involving the question as to whether the United States can condemn with the idea of saving our rights and protecting our property with a view to salvage, and it is the opinion of the office, and also, I understand, it has been so held in the Federal court at Little Rock, that the interest of the United States in the salvaging of property is a sufficient public interest, and that we are not merely taking the land from one man to give it to another, which would not be a public purpose. Of course, the question has not been passed on by the higher courts.

Mr. WRIGHT. Colonel, the fact that the option feature of the contract with the Alabama Power Co. is void would not necessarily render void the other parts of the contract?

Col. HULL. Especially when a great deal of it has been executed.

Mr. WRIGHT. Yes. Do you understand from an analysis of that contract that the option feature is one of the moving considerations?

Col. HULL. It was not so expressed.

Mr. WRIGHT. It is rather an incident of the contract?

Col. HULL. It was so expressed in the drafting of the contract.

Mr. WRIGHT. And is not really a part of the substantial consideration which moved the Alabama Power Co. to execute the contract?

Col. HULL. As between man and man, it would be construed as a consideration, but between an individual and the Government, with the law as it is it would not be so construed.

Mr. WRIGHT. The Alabama Power Co., like every other person and corporation, was charged with knowing what the law was when they executed the contract?

Col. HULL. Certainly.

Mr. WRIGHT. Col. Parker, I believe, asked you about section 14 of the Ford offer, the first part of section 14, whereby the company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen, etc. This particular part is what I desire to call your attention to, "except as it may be prevented by strikes, accidents, fires, or other causes beyond its control." The particular words there, "or other causes beyond its control," certainly could not be construed to mean that they would be relieved if they were not making a profit.

Col. HULL. That is the way I answered Judge Parker.

Mr. WRIGHT. The words, "or other causes beyond its control" are of the same genus or the same species as the words, "strikes, accidents, fires, etc." Would not that be the proper construction?

Col. HULL. Yes, sir.

Mr. WRIGHT. Some act of God, or some providential happening along the same lines.

Col. HULL. Yes; in the same general class.

Mr. WRIGHT. Do you know what this Air Nitrates Corporation realized out of its contract with the Government?

Col. HULL. No, sir.

Mr. WRIGHT. You have no information on that subject?

Col. HULL. I have no information.

Mr. WRIGHT. Do you know the character of transmission line that was constructed by the Alabama Power Co., whether it consisted of steel towers or poles?

Maj. BURNS. Wooden poles with copper wire.

Mr. WRIGHT. You may not know, but perhaps Col. Burns knows whether this nitrate plant No. 2 was constructed on Government land.

Col. HULL. On Government land.

Mr. WRIGHT. That is where the principal investment was made?

Col. HULL. By the Government; yes. That was with the Air Nitrates Corporation.

Mr. WRIGHT. The Air Nitrates Corporation really constructed this nitrate plant No. 2?

Col. HULL. Yes, sir.

Mr. WRIGHT. Incidentally, I believe, Colonel, that is the construction work down there about which so much criticism was made about the lavish expenditure of money.

Col. HULL. Yes; it has been investigated by Congress, by the Department of Justice, and by the War Department.

Mr. WRIGHT. I understand you did not prepare this section 15, about which Mr. Miller asked you?

Col. HULL. No, sir.

Mr. WRIGHT. And you say that is satisfactory to the agricultural interests?

Col. HULL. So I am informed.

Mr. WRIGHT. Do you think it would be possible under that section for some purchasing company to organize and create a monopoly on this product; buy it all up so as to prevent its proper distribution at reasonable prices? Do you not think the Sherman Antitrust Law would take care of that in the absence of this provision here?

Col. HULL. It might be applicable. They would also have to have the cooperation of the board of directors of the company.

Mr. STOLL. Colonel, I want to have a little legal controversy with you relative to section 19, the guaranty clause of Mr. Ford's offer. Secretary Weeks expressed some doubt, but stated, however, he was not a lawyer, as to the guaranty that Mr. Ford made, and some of my brethren of the bar around the table here also expressed some doubt. I want to call your attention to that section 19. There are two distinct clauses, you might say, in it. The first is: "Upon acceptance, the promises, undertakings, and obligations shall be binding upon the United States and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors and assigns." Now, Mr. Ford promises to organize a company and do certain things, and he makes his promises binding upon him and his assigns. There is a semicolon there, and he goes on further to say: "And all the necessary

contracts, leases, deeds, and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed and delivered by the respective parties above mentioned? Under that can not the Government force Mr. Ford to enter into such guaranties as would be necessary to carry out the proposal that he made?

Col. HULL. I do not believe so.

Mr. STOLL. What does that mean, then?

Col. HULL. You mean——

Mr. STOLL (interposing). What does that section 19 mean if it does not mean that?

Col. HULL. Suppose the Government would say to Mr. Ford, "Your company ought to have a paid-up capital of $50,000,000." Could they enforce that under that clause, if the Secretary thought that was a reasonable amount?

Mr. STOLL. No; I do not say that it says what the capital shall be, but I say that it forces him to give a guaranty to carry out what he has obligated himself to do; otherwise that last clause there is absolutely of no value.

Col. HULL. He has already guaranteed it personally.

Mr. STOLL. Agreed personally to form a company, and he backs up that promise to form a company.

Col. HULL. And also to do other things.

Mr. STOLL (continuing). By his own guaranty and by what his property is worth, and then it says, "and all the necessary contracts, leases, deeds, and other instruments necessary" to do what? Or appropriate to do what? To effectuate the purposes of this proposal. Now, what does that mean?

Col. HULL. Under that clause there was somewhat of an argument that Mr. Ford by the time he would organize the company that would bind itself to do all these things would be excused. A careful study of the language convinces me that Mr. Ford is bound, as well as the company, and is not discharged the minute the company is organized and undertakes these matters, but to go one step further and say that the Government under that language could compel him to do this or that or the other thing, except what he has already bound himself to do, I do not believe the Government can do it.

Mr. STOLL. Mr. Ford, for instance, said that he would operate this plant for 100 years for the purpose of manufacturing certain elements used in fertilizers, at 8 per cent profit. Now, when it says here, "necessary contracts to effectuate that," what will you stipulate in the contracts to effectuate that unless you make him put a guaranty in it; in fact, everything that he has promised to do, this says we will make contracts whereby he will effectuate what he has promised to do, and no other construction can be put on it that I can see, except that he would be compelled to enter into a guaranty to do it. That is the only practical, legal construction that could be put on it.

Col. HULL. That provides for the deeds and contracts he has already bound himself to. I do not believe that clause would permit anyone, the court or the Secretary of War, to hold he would have to put any other additional guaranty.

Mr. STOLL. What do you mean, then, Colonel, by the words, "to effectuate the purposes of this proposal"? What does that mean?

Col. HULL. How about the Government turning over the deeds?

Mr. STOLL. That is for the Government to do, but both of them have got——

Col. HULL (interposing). What about the construction contracts for Dams 2 and 3?

Mr. STOLL. Well, what else? To get back to the fertilizer proposition, how under the contracts that the Government must enter into——

Col. HULL (interposing). Those are some of the contracts that would have to be entered into—those construction contracts.

Mr. STOLL. And also the payment of interest, and all that sort of thing. How can the Government form a contract to effectuate the purposes of that promise of Mr. Ford unless they put a guaranty in it? What other means could they adopt unless they put a guaranty in it?

Col. HULL. I am sorry I do not fully follow you.

Mr. STOLL. It is as clear to me as the nose on a man's face. I will state it again, referring to the second clause after the semicolon in paragraph 19; I will use this as a concrete illustration. Mr. Ford agrees to make fertilizer, or the elements of fertilizer. Now, in fixing the contract, you admit that the Government and Mr. Ford will have to enter into a contract?

Col. HULL. Not necessarily. This may be the only contract as far as the main purposes are concerned.

Mr. STOLL. You have got to enter into something.

Col. HULL. No contract is necessary to effectuate this feature.

Mr. STOLL. Oh, yes; it is; because the Government has never signed it.

Col. HULL. They may never have to, if Congress accepts the proposal.

Mr. STOLL. Of course, this is all predicated on the idea that this goes through, because if it does not go through we will not need any contracts.

Col. HULL. Suppose Congress passes the resolution and it is approved by the President, stating that we will accept the offer of Mr. Ford. This instrument will not have to be signed by anybody.

Mr. STOLL. I hardly think we will do that. If they pass anything, it will be something authorizing the Secretary of War or some one else to enter into a contract with Mr. Ford, and I do not think Congress would be so foolish as to accept it in that way. Now, when they fix up a contract, as they will have to do, and Mr. Ford has promised heretofore to make this fertilizer, what will you place in the contract that will make him carry out this part to effectuate the purposes of this proposal unless you put a guaranty in it?

Col. HULL. On the contract as it stands to-day, Mr. Stoll, his promise is the only guaranty. What the Secretary suggested was that there should be additional guaranties. Now you are suggesting that the Secretary, under the terms of this contract, could write those additional guaranties in the contracts.

Mr. STOLL. Oh, no, Colonel; this is not the contract. A contract is where two parties agree, and the Government has never agreed to this.

Col. HULL. No.

Mr. STOLL. This is merely an offer by Mr. Ford, so it can not be construed as a contract. He offers to do certain things, and it is up to the Government to accept or reject it.

Col. HULL. In connection with that, Mr. Ford wanted this matter to be virtually a contract, and he uses language which makes a contract in many cases.

Mr. STOLL. You mean the provision about the acceptance in whole?

Col. HULL (reading). "The undersigned hereby submits to the Secretary of War, and through him for appropriate action by the President and Congress, the following offer, which shall become a binding agreement upon approval of same by Congress."

Mr. STOLL. Binding agreement on whom, on Mr. Ford?

Col. HULL. Yes.

Mr. STOLL. That is his offer, and he follows all that up when the Secretary was dissatisfied with the original offer whereby he guaranteed for himself and his assigns to do a certain thing—and then he goes on to say that all the necessary contracts must be made for the purpose of carrying this out. Now, I ask how will it be fixed in the contract to effectuate the purposes of the proposal unless you put a guaranty in it of some kind. You can not do it otherwise.

Col. HULL. That is what the Secretary was suggesting, that some additional guaranty be put in.

Mr. STOLL. Under this language, does not Mr. Ford agree to do it?

Col. HULL. No.

Mr. STOLL. Then what do you mean by necessary contracts to effectuate it?

Col. HULL. He thinks his word is sufficient to protect the Government. The Secretary does not. There is not a meeting of minds yet.

Mr. STOLL. If he had thought that he would have stopped at the first clause wherein he bound himself to do it, but there is a semicolon there, and he goes on and agrees to enter into contracts and leases to effectuate these very things.

Col. HULL. There has been no meeting of minds between Mr. Ford and the Secretary yet as to that point?

Mr. STOLL. No; because it is an offer, and that is a part of his offer—to enter into a contract to effectuate what he has offered.

Col. HULL. What he may think will effectuate it and what the Secretary and Congress may think will effectuate it——

Mr. STOLL (interposing). As a lawyer, you say that is not an offer to guarantee?

Col. HULL. I would have to say no.

Mr. STOLL. I will have to beg to differ from you.

Col. HULL. I may be entirely wrong.

Mr. STOLL. You certainly are. Now, just a few more facts, Colonel, if you please. How many outstanding contracts has the Government now relative to Muscle Shoals?

Col. HULL. I have had three brought to my attention.

Mr. STOLL. What three are those?

Col. HULL. The Air Nitrates, the Alabama Power, and the General Chemical, which I think has been terminated.

Mr. STOLL. Which of those affect real estate, the Alabama Power Co.?

Col. HULL. The Alabama Power Co. is the principal one.

Mr. STOLL. That is the only one that affects real estate?

Col. HULL. The other has an option on plant No. 2. Whether there are any others I do not know.

Maj. BURNS. We have still a contract with the Air Reduction Co. whereby we agree to pay certain royalties for the use of their process for separating nitrogen and oxygen.

Mr. STOLL. But that does not apply to real estate.

Maj. BURNS. No.

Mr. STOLL. The power plant of the Government is on land owned by the Alabama Power Co.?

Col. HULL. The power plant at No. 2 is on our own land.

Mr. STOLL. I mean the steam plant at Gorgas.

Col. HULL. Those are on the lands of the Alabama Power Co.

Mr. STOLL. And the Government does not own that land.

Col. HULL. The Government does not own that land; no, sir.

Mr. STOLL. How, then, can the Government make a contract to sell Mr. Ford that which it does not own?

Col. HULL. We would have to condemn.

Mr. STOLL. How long would it take you to condemn usually? What is the usual procedure when the Government undertakes to condemn, do you know?

Col. HULL. It depends on how much it is litigated. It may take several years before we can complete the title.

Mr. STOLL. Has the Alabama Power Co. made any demand for specific performance of this contract with the Government?

Col. HULL. I have never read the letter which the Secretary submitted the other day from them.

The CHAIRMAN. Colonel, I want to try to make one or two things clear. Gen. Williams, I believe, said that the funds used for the construction of the Muscle Shoals property were appropriated in the fortification bill. You say that the funds were expended under the national defense act. Is it not a fact that the money that was used from the national defense act was used for the work in connection with Dam No. 2?

Col. HULL. Only partly. The project was started under the funds of the national defense act. The funds provided in the national defense act were inadequate for all the expenditures that were made in connection with the Muscle Shoals project.

The CHAIRMAN. That is quite true.

Col. HULL. And the result is that a great many of the projects were virtually all constructed out of funds obtained through "armament and fortification."

The CHAIRMAN. As I recall, for Dam No. 2 the appropriations amounted in the aggregate to a little over $17,000,000, and the actual money expended was a little over $16,000,000, and the total embraced in the national defense act was $20,000,000.

Col. HULL. $20,000,000.

The CHAIRMAN. So that after you have obligated about $17,500,000 there is not very much left out of that fund for use at Muscle Shoals, is there?

Col. HULL. I think it was all spent and then recredited back from other appropriations. I am not sure as to that.

Maj. BURNS. May I help out a little bit in that matter?

Col. HULL. The Ordnance Department can tell about that much better than I can.

Maj. BURNS. The No. 2 plant was always very carefully kept separate from the national defense act of 1916, and not one cent of the national defense act money has been spent on the No. 2 plant or any of its subsidiary plants.

The CHAIRMAN. As a matter of fact, the No. 2 nitrate plant cost the Government $67,000,000.

Maj. BURNS. Yes, sir.

The CHAIRMAN. And we never had that much money in the national defense act and they had to go to other sources.

Maj. BURNS. The national defense act of 1916 money was used partly for the No. 1 plant.

The CHAIRMAN. Can you tell the committee just exactly how that $20,000,000 was expended or the basis of expenditure?

Maj. BURNS. The Engineer Corps has had allotted, I should say, $17,000,000, most of which has been spent on the dam. I think they still have available several hundred thousand dollars which they are holding to maintain the plant until its final disposition is known. The Ordnance Department had a total of, roughly, $3,000,000.

The CHAIRMAN. Out of the $20,000,000?

Maj. BURNS. Yes, sir; although part of it was spent for the land at No. 1 and part of it is still available on the books of the Ordnance Department.

The CHAIRMAN. What do you mean by land at No. 1—the nitrate plant or No. 1 dam?

Maj. BURNS. No. 1 nitrate plant; the Ordnance Department still has money under the nitrate supply act on its books, and the fixed nitrogen research laboratory which is operated at the American University is also being financed out of that fund for the accomplishment of the objective of the appropriation, namely, for the investigation of the fixation of nitrogen for use in munitions of war and fertilizers.

The CHAIRMAN. So anything more than this $20,000,000 comes out of another appropriation?

Maj. BURNS. Yes, sir; it comes out of the appropriation for fortifications almost entirely. There has been a little ordnance service and repairs of arsenals' money spent for maintenance purposes. I would like to emphasize the fact that not one cent of the national defense act money was spent at the Warrior plant. That was all out of the fortifications appropriations.

Mr. GREENE. Colonel, these questions are asked by a layman and may not be framed correctly to meet the legal mind, but, on the other hand, the public interest is largely on the part of laymen, perhaps, and if put into their tongue we may get something in the way of information. If this proposition on the part of Mr. Ford is accepted as it is written in the copy before us, do you understand that thereby the United States Government is freed entirely from any resulting obligations to any corporation or firm or persons incidental to the Muscle Shoals project in any way after Mr. Ford has taken possession under the terms of the accepted proposition?

Col. HULL. So far as I have been advised, that is correct.

Mr. GREENE. We stand clear of any obligations, except such as may be specified in the proposition of Mr. Ford?

Col. HULL. I do not know all the construction contracts that the engineer department may have made in connection with the dam, or any other matters.

Mr. GREENE. Was it the general intent of this contract that when Mr. Ford took possession he took it subject to all the obligations that were then upon the United States Government relating to the proposition?

Col. HULL. You mean in regard to royalties, and things of that kind?

Mr. GREENE. Any kind of obligation now incumbent upon the Government in the ownership or operation or utilization in any way of the Muscle Shoals project, using the general term.

Col. HULL. So far as I know, we have no obligation outstanding in this contract. It is also silent in regard to his taking over and holding the United States harmless.

Mr. GREENE. It is silent on that?

Col. HULL. So far as I can see.

Mr. GREENE. So there is the possibility of the threat of persons assuming or proposing some claims or rights against the Government which did not pass to Mr. Ford to defend?

Col. HULL. Take the Alabama Power Co. rights, for instance. We agree to turn over to Mr. Ford the title to that property, and the Alabama Power Co. claim they had a contract with us that is legal, and if it is legal Mr. Ford does not agree to hold us harmless against the claims of the Alabama Power Co. We did not ask him to.

Mr. GREENE. One of the things which the general public will want to understand is this: If we complete the contract with Mr. Ford we step out and have unloaded apparently what is regarded as a white elephant.

Col. HULL. We have that obligation, irrespective of Mr. Ford, which does not release us from or increase our obligation.

Mr. GREENE. I appreciate that. What I am trying to get at is for general popular information, whether we are free and clear, and that all obligations that were entailed upon us would pass to Mr. Ford as a part of his consideration?

Col. HULL. No, sir; he would take up the burdens at the time he took over the property, and if any obligations are outstanding we are responsible for them.

Mr. GREENE. The property does not pass to him subject to the rights or royalties of other people?

Col. HULL. If he utilizes the patents, of course, he would have to take over the royalties.

Mr. GREENE. We might be running along having unloaded this property, to use that term, upon Mr. Ford and still ourselves be liable and subject to such claims and interests as other persons might propose against the Government irrespective of Mr. Ford's present operation of the plant?

Col. HULL. No; if there are any claims made for use of the royalties they would be against Mr. Ford.

Mr. GREENE. There would be these other things?

Col. HULL. These other things existing to-day would still be a burden on the Government.

Mr. GREENE. We would have to go through another process to get us out of those obligations.

Col. HULL. If we are liable at all we are liable now, and would have to get free any way.

Mr. GREENE. So that to sum up this contract it does not mean that upon its acceptance we stand out from under completely?

Col. HULL. Oh, no.

Mr. GREENE. I notice this much discussed section 15 by which it is provided that there shall be the creation of a board of not more than nine members from various farmers' organizations that are classified. This contract is to run for 100 years, according to its present term. What is there to guarantee to anybody that farmers' organizations such as are represented here are to continue for 100 years, and therefore have representatives on this board? That may seem like an absurd question, but I want to get at the stability of this board. If a board were to be composed out of existing governmental institutions we would assume it would be permanent, but this is an ephemeral citizens' organization which may pass out of existence as easily as it came into existence. They may disband, and what then would constitute the board?

Col. HULL. There would be an agreement between the Government and Mr. Ford, or it would be referred to the courts.

Mr. GREENE. Then on the happening of such an emergency it would necessitate new action.

Col. HULL. Yes, sir.

Mr. GREENE. There is nothing in the contract that would guarantee any reasonable continuance of this board on its presently proposed foundation?

Col. HULL. Not if the organiaztions were out of existence and had no successor. Upon the happening of that contingency you would have to have an agreement between the Government and Mr. Ford, or it would have to be referred to a court of equity.

Mr. GREENE. If this board should lapse through any failure of the organizations to perpetuate themselves, and failure of the farmers themselves to agree upon any one who should represent them, there must be a new meeting of the minds between the Government and Mr. Ford?

Col. HULL. Yes, sir.

Mr. GREENE. That is not a permanent guarantee that Mr. Ford would be under the surveillance of the farmers?

Col. HULL. No.

Mr. GREENE. That is not a permanent guaranty that Mr. Ford would be No. 2 for the purpose of producing this ingredient necessary for the making of fertilizer at a specified capacity, with this exception, in language set out, "except as it may be prevented by strikes, accidents, fire, or other causes beyond its control." It is reasonable to assume, of course, that notwithstanding Mr. Ford's production of this sulphate of ammonia for fertilizer purposes under this contract, other concerns, chemical laboratories, and similar industries would be at work on all sorts of methods for accomplishing the same thing. That is something which we are always trying to provide for. If in the course of a few years it is demonstrated that this ingredient of fertilizer can be produced through ordinary commercial sources, and if it becomes as common a staple as many other commercial products, it would manifestly not be to the business interest of Mr. Ford to continue the manufacture at his nitrate plant. It becomes a market condition which is one of the causes looking toward its control. Would you think he would be justified then in ceasing to manufacture this ingredient?

Col. HULL. No, sir. I do not think the conditions which you outline would be construed by any court as another cause beyond his control as specified by this contract. That is a technical question and that is the reason I give you the answer that that language among lawyers would mean that it would have to be something that is set forth.

Mr. GREENE. I want to get at the facts.

Col. HULL. That is the same question which Judge Parker asked.

Mr. GREENE. Suppose the farming world commonly accepted as an economic necessity, and so far as that is concerned, an economic advantage, an entirely new process in the manufacture of this product. Would Mr. Ford have to readapt this nitrate plant to meet the new process?

Col. HULL. Yes, sir.

Mr. GREENE. He must keep apace with the developments in the outside world for 100 years?

Col. HULL. He is obligated to do that by the contract.

Mr. GREENE. That you think is quite clear?

Col. HULL. Yes, sir.

Mr. GREENE. Whatever may be the change in the manner of the outside world producing this product or its equivalent he must meet it, and we are assuming that the laws of chemistry will not change, and it will be this ammonium sulphate?

Col. HULL. It might be an entirely different compound.

Mr. GREENE. Then he must meet that compound?

Col. HULL. He would have to meet that proposition to produce fertilizer, because that is covered in the very next clause in regard to maintaining a research laboratory and to keep on experimenting to get the products in a cheaper and more feasible way.

Mr. GREENE. He would have to follow the thing all through the transmutations of chemistry?

Col. HULL. He has to produce to the maximum given capacity.

Mr. GREENE. I thought the production was of this specific, particular element.

Col. HULL. It says nitrogen and other fertilizer compounds.

Mr. GREENE. Mr. Stoll was interested in asking you about section 19, as to the probability of that section being interpreted to mean that Mr. Ford by the terms of the contract actually guarantees the fulfillment of this part of the contract in that he obligates himself to pass the necessary papers to do it. What do you lawyers say—is the promise to make the guarantee equivalent to a specific guarantee? I read no promise to make a guarantee. Mr. Stoll does. I was interested in following that question, from a layman's standpoint. I thought a guarantee of anything was in the shape of a specific proposition in specified terms and words as to the particular thing to be done as a guarantee, and generally accompanied by some proposition of indemnity.

Col. HULL. You and I come nearer to agreeing than you and Mr. Stoll.

Mr. HULL. Colonel, I think we are sometimes liable to lose sight of the fundamental idea of this whole matter, and that is that this is a national defense proposition. We have down there at the present time nitrate plant No. 2, built and in working shape, ready to turn out practically at a moment's notice nitrates for high explosives. Now, by this contract we agree to sell this to Henry Ford. Yet we have a string attached to the sale to the effect that at any time we can take that plant over and operate it for the production of nitrates for the making of high explosives.

The CHAIRMAN. In case of war.

Mr. HULL. Yes. The question has come to my mind—and I think it is of vital importance—is there anything in this contract to assure the Government that this plant will be maintained under all circumstances as a plant for the manufacture of explosives or nitrates for high explosives in case of war? Is that fully protected? In other words, could Henry Ford assign this plant, as Mr. Greene has suggested, to some other method of manufacturing nitrate for fertilizer and change the method? In other words, I mean, we would have a formula for the manufacture of nitrates for high explosives which is another method. Is that fully protected?

Col. HULL. In section 14 you will find this provision: "To maintain nitrate plant No. 2 in its present state of readiness or its equivalent for immediate

operation, in the manufacture of materials necessary in time of war for the production of high explosives." That is his obligation.

Mr. HULL. In other words, although he would own the factory, if we were to find he was destroying that factory as a factory for the manufacture of nitrates for high explosives, we could stop him?

Col. HULL. It would be a breach of contract, and under section 18 we would have the right to go into the district court for the northern district of Alabama and maintain the appropriate action.

Mr. HULL. He could not destroy it in any way without our stopping him; we would have the right to stop him if he tried to assign it to somebody else, or sell it for some other process? We would still have the right to go in?

Col. HULL. I think so, without the shadow of a doubt. We would have the right to have that property protected. If we make a deed for the transfer of nitrate plant No. 2, I see no violation of the contract if that clause was written into the deed we would give to Henry Ford for plant No. 2.

Mr. HULL. There is another question that comes up, and that is the question of the profits on this plant for the manufacture of the components of fertilizer. It is agreed that 8 per cent on the money invested is enough, or on the cost per annum. Supposing that the fertilizer is manufactured down there and at a price which, in the opinion of this board, it could be sold, and they sell it at a higher price, in agreement with that board. What would become of the profits in excess of 8 per cent?

Col. HULL. I do not think the board would have any right to authorize that. They would have to juggle the figures by putting in other items of cost.

Mr. HULL. How would they do that?

Col. HULL. In a manufacturing enterprise where they have various lines of activities, the figures as to what certain articles will cost are determined to a great degree by the items which they put in the overhead.

Mr. HULL. Your contention is that they would have to reduce the price low enough so they were not making but 8 per cent; is that correct?

Col. HULL. That is in the contract.

Mr. HULL. Then how would they allocate that fertilizer? Suppose they could produce it at a price $20 cheaper than any other fertilizer, there would be certainly a great object to get hold of it. How are you going to fix the allocation of it to the different factories?

Col. HULL. The board has to make the allocation.

Mr. HULL. They would have the right under the contract to allocate it to farmers?

Col. HULL. They could allocate it by State or sections of the country or by counties.

Mr. MILLER. Colonel, I do not care to indulge in any niceties here at all. What we are trying to get at is something practical. Nitrate plant No. 2 is the country's resource, so to speak, in regard to the production of ammonium nitrate. It is of intense interest to the country that nitrate plant No. 2 shall be preserved and be available for the production of that substance. Suppose there should be a fire which should destroy nitrate plant No. 2. Under the clause of that contract Mr. Ford is excused from the operation of this plant. A fire hazard is always present, and accidental destruction is especially always present in dealing with any ingredient of an explosion. What condition would the United States be left in as to the reproduction of nitrate plant No. 2 in the event of fire, or any other fatality?

Col. HULL. He would be excused from producing nitrate as a result of the fire, but under clause B of article 14 he would be obliged to rebuild because he must maintain the plant in its present state of readiness or its equivalent.

Mr. MILLER. This is aside from that question, but I do not suppose the United States would have an insurable interest in that plant.

Col. HULL. The United States does not insure its properties.

Mr. MILLER. It would not have an insurable interest?

Col. HULL. I think Mr. Ford under that clause would in case of fire or accident be liable.

Mr. MILLER. That would be acted upon reasonably soon.

Col. HULL. Yes; within a reasonable time.

Mr. MILLER. In reference to the ultra vires contract with the Alabama Power Co.——

Col. HULL (interposing). It is comparable to that.

Mr. MILLER. Practically, as a lawyer—and you are a good one—what would be the best method, as well as the quickest, of determining the stability of

their interest there in order to commence action on the construction of the contract.

Col. HULL. I think the first thing the Government ought to do—and I would recommend it to the Secretary of War without any hesitancy if we had an appropriation—would be to proceed to condemn it.

Mr. MILLER. And acquire the fee?

Col. HULL. And acquire the fee.

Mr. MILLER. Then, that would compel the Alabama Power Co. to establish its right, if any, under the contract.

Col. HULL. Yes, sir.

Mr. MILLER. And then the contract would come properly before the court?

Col. HULL. I doubt it; I think we would have the right to condemn on account of the interest we had.

Mr. MILLER. In the condemnation proceedings, it would be in view of the Government acquiring the fee?

Col. HULL. Yes.

Mr. MILLER. If they desired to test their rights under the contract they would have to set them up?

Col. HULL. They might set them up with a view to defeating the condemnation proceedings if they would prefer to do that.

Mr. FIELDS. Colonel, I would like to hear your opinion as to the full powers of this board which is proposed under section 15 of the contract.

Col. HULL. I have given it no special thought. I should say their full powers were simply those recited here, fixing the price and determining what elements are properly elements of cost and what is the proper distribution.

Mr. FIELDS. Those are pretty broad powers which that board has, are they not?

Col. HULL. They are certainly controlling, so far as the profits which this company would make in the manufacture of this article are concerned.

Mr. FIELDS. The profits on this commodity are under the control of this board?

Col. HULL. Yes; as far as the company is concerned; they would have control of the sales.

Mr. WURZBACH. I do not know whether you understood me to say that section 19 contained a guaranty on the part of Mr. Ford. I think you stated you did not think so.

Col. HULL. I thought it did; that it contained his personal guaranty as strong as it could be written.

Mr. WURZBACH. And that was the limit of his guaranty here?

Col. HULL. That was the limit of his guaranty, Mr. Ford and his estate.

Mr. WURZBACH. Do you not think that the wording of section 19 is not inconsistent with Mr. Ford's intention and willingness to give additional security for the faithful performance of his obligation?

Col. HULL. It would not be repugnant; if Mr. Ford wantetd to give any additional assurance, he would be at liberty to do so. I insert herewith copy of the proposal of the General Chemical Co., showing Mr. Baker's acceptance thereon.

GENERAL CHEMICAL CO.,
New York, June 5, 1917.

To the PRESIDENT:

The committee on nitrate supply, under section 124 of the "Act for making a further and more effectual provision for national defense, and for other purposes," has requested the General Chemical Co. to state the terms upon which said company would grant to the Government the right to use its processes, which have been exhibited to said committee, in the "production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers."

In compliance with said request the General Chemical Co. begs to submit the following tender:

The General Chemical Co. hereby places at the disposal of the President, for the purposes aforesaid, and grants to the Government of the United States the use of its processes and designs of apparatus for catalytically combining nitrogen and hydrogen to form ammonia, as exemplified in one or more of its United States patents Nos. 1141947 and 1141948, both of June 8, 1915; 1143366, of June 15, 1915; 1151537, of August 24, 1915; and 1159364 and 1159365, both of November 9, 1915; and such other patents as may hereafter be granted; and the recovery of such ammonia as liquified ammonia or as a salt, such as ammonium chloride, sulphate, or nitrate, and further its process of catalytically converting

ammonia and oxygen into nitric acid and of recovering such nitric acid as a strong acid or as nitrate such as ammonium or sodium nitrate and on whose patentable features final action has not yet been taken, in so far only as the Government shall desire to use the same in its own works for the production of the munitions of war and products useful in the manufacture of fertilizers, upon the following terms and conditions:

1. In so far as the Government shall see fit to employ said processes or apparatus or any of them in the manufacture of products to be used exclusively for munitions of war, no compensation by way of royalty or otherwise will be asked or received by the General Chemical Co.

2. In so far as the Government shall see fit to employ the said processes or apparatus or any of them in the manufacture of products to be used for fertilizers, the Government shall pay to the General Chemical Co. a royalty for such use. The royalty so to be paid shall be based upon the nitrogen content of the material produced for fertilizer purposes and shall be at the rate of $5 for each ton of 2,000 pounds of fixed nitrogen in whatever form combined, and shall be payable quarterly, until the 9th day of November, 1932, and thereafter until the expiration of all patents involving any substantial feature of the process or apparatus.

3. The General Chemical Co. hereby places at the disposal of the President the entire services of those members of its staff under whose immediate supervision its said processes have been brought to the present stage of development, upon the sole condition that the Government shall assume and discharge all obligations which the company is now under with respect to the compensation of said employees, together with the necessary increase of their expense, so long as the Government shall avail itself of their services.

4. If this tender shall be accepted, the General Chemical Co. hereby undertakes forthwith to communicate to the designated experts for the Government all of its knowledge and discoveries pertaining to the said processes and apparatus, whether or not the same shall be the subject of patents, and from time to time thereafter, so long as the Government shall continue the use of said processes, to communicate all further improvements promptly as they shall come to the knowledge of the company and without further charge for the use thereof, within and subject to the limitations before expressed. And, reciprocally, it is understood that all modifications and improvements in the processes or apparatus, which the Government shall discover or employ, shall be at the disposal of the General Chemical Co. and its licensees, if any, for use in its or their own works, and that all such modifications and improvements shall be freely exhibited upon request to the representatives of the General Chemical Co.

5. It is understood that for all purposes of this agreement and generally so far as concerns the use of said processes, or any part thereof, by the Government, its agents or other parties claiming under it, it and they shall at all times acknowledge and recognize the General Chemical Co. as the sole owner of said processes and of the exclusive right to use the same, subject only to the rights granted to the Government pursuant to this tender, and shall, so far as practicable, exclude the public from all works in which said processes shall be employed, and, generally, shall use all reasonable means to preserve said rights unimpaired.

Respectfuly submitted by the General Chemical Co.

W. H. NICHOLLS,
Chairman of the Board.
JNO. A. MARTIN, *Secretary.*

Accepted on behalf of the President, June 14, 1917.

NEWTON D. BAKER.

EXTRACTS FROM THE MINUTES OF A REGULAR MEETING OF THE EXECUTIVE COMMITTEE OF THE GENERAL CHEMICAL CO. HELD ON THE 1ST DAY OF JUNE, 1917.

In the matter of the tender to the President of the use of certain processes of the company for the production of munitions of war by the Government free of royalty, and for the manufacture of fertilizers by the Government upon a royalty to be subsequently fixed. approved by the board of directors April 20, 1917, Mr. Steele reported that the nitrate committee of the War Department desires that the royalty to be paid for the use of said processes in the manufacture of fertilizers should be fixed at the present time, whereupon the following resolution was offered:

"*Resolved*, That the proper officers of the company be and they are hereby authorized to execute and deliver in the name of the company and under the company's seal, a formal tender of the use of our processes or a contract therefor for the purposes and upon the general terms above stated and in such form as shall be approved by the counsel for the War Department and the general counsel of this company.

"Carried."

A true copy.

——— ———, *Secretary.*

Mr WURZBACH. The terms of it are not inconsistent with his intention to give additional security.

The CHAIRMAN. Maj. Burns, you are connected with the Ordnance Department of the Army?

Maj. BURNS. Yes, sir.

The CHAIRMAN. Do you know the situation with regard to Muscle Shoals pretty thoroughly? You made a study of it?

Maj. BURNS. I made quite a study of it.

The CHAIRMAN. May I ask you to return on Monday morning, because we may want to ask you some questions?

Maj. BURNS. I will be glad to do so.

(Thereupon, at 5 o'clock p. m., the committee adjourned until Monday, February 13, 1922, at 10.30 o'clock a. m.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Monday, February 13, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MAJ. J. H. BURNS, ORDNANCE DEPARTMENT, UNITED STATES ARMY.

The CHAIRMAN. I want to say to the committee that Mr. Mayo, representing Mr. Ford, has arrived in town this morning. He will be able to come up here, and will come here at 2 o'clock for the afternoon session. In the meantime we will have a thorough explanation of the Muscle Shoals district by Maj. Burns.

Major, the map which is before you is supposed to represent that district pretty well. Can you use that in explaining the matters you want to explain?

Maj. BURNS. Yes, sir.

The CHAIRMAN. Will you kindly state for the record your name in full and the position you occupy in the War Department?

Maj. BURNS. My name is J. H. Burns, major of Ordnance. I am now chief of the ammunition division of the Ordnance Department. I have been for two and a half years connected with the nitrate division of the Ordnance Department, which has control of the nitrate activities centered in the Muscle Shoals region.

The CHAIRMAN. Major, as chief of that division, was your presence at Muscle Shoals required quite frequently?

Maj. BURNS. I have been to Muscle Shoals several times. I went into the nitrate division after all of these activities had been started and practically completed, but I have been connected with the curtailing of activities down there and the establishment of the enterprise on a peace time basis.

The CHAIRMAN. I understood you to say that you had been for two and a half years connected with that division.

Maj. BURNS. Yes, sir; but I came into the nitrate division about June 1, 1919, which, of course, was after the bulk of the work had been done.

The CHAIRMAN. So you are pretty familiar with the plant?

Maj. BURNS. I think I am; yes, sir.

The CHAIRMAN. Now, would you kindly, in your own way, state to the committee for the benefit of the committee just what that plant consists of and the condition it is in at the present time?

Maj. BURNS. The Ordnance Department has only to do with the chemical end of the project at Muscle Shoals, and that is subdivided into two main projects, the No. 1 nitrate plant, and the No. 2 nitrate plant. The No. 1 nitrate plant is located near Sheffield, Ala., and the No. 2 nitrate plant is located about 5 miles up the river, very close to Muscle Shoals, on the Tennessee River.

The No. 1 nitrate plant was started in pursuance of the national defense act of June 3, 1916, by which Congress required that investigations, etc., be made to determine the best method of fixing nitrogen and of using such fixed nitrogen for munitions of war and for fertilizers.

In an effort to carry out the will of Congress the War Department organized several committees, one of which went overseas in order to study the best methods, and finally, as a result of recommendations of these various committees, the No. 1 plant was started to use a modification of the so-called Haber process of fixing nitrogen. The plant itself was started in the fall of 1917, and

it was not only to fix nitrogen and form ammonia but also to change the fixed nitrogen or ammonia into nitric acid, and finally to form ammonium nitrate or the explosive. There was also a plant to concentrate the nitric acid. The plant, as far as every process was concerned, except the fixation part, was a success. The fixation process, however, was not a success. They did produce some ammonia, but the plant only ran intermittently, and they had a great deal of difficulty in making it go even from day to day.

Mr. PARKER. Was that the first part of the process, to fix the nitrogen?

Maj. BURNS. Yes, sir; the fixation of the nitrogen.

Mr. PARKER. And that you could not do?

Maj. BURNS. No, sir; that was not a success. I think it should be pointed out to the committee, however, that this was practically the pioneer effort in America for doing this work, and it would be natural to suppose that the first efforts would discover many serious difficulties.

The CHAIRMAN. You say that a committee was appointed to go overseas and study these processes?

Maj. BURNS. Yes, sir.

The CHAIRMAN. The Haber process you are speaking of now is the German process?

Maj. BURNS. Yes, sir.

The CHAIRMAN. It was used extensively during the early part of the war, especially in Sweden and Norway, where they had enormous water power?

Maj. BURNS. No, sir; not the Haber process. The Haber process does not require very much power. The cyanamid process and the arc process are the processes used up in Scandinavia, and they are used up there because they have such very cheap water power, which is necessary for those processes.

The CHAIRMAN. And that is the process used in nitrate plant No. 2?

Maj. BURNS. Yes, sir. The Germans developed the Haber process so they could make nitrogen without the consumption of a great deal of power.

The CHAIRMAN. Was the Haber process the one that was used in which a terrible explosion occurred in Germany soon after the war?

Maj. BURNS. Yes, sir.

The CHAIRMAN. I do not remember now how many thousands of people were killed by that explosion.

Maj. BURNS. It was a very disastrous explosion, but, of course, the explosion was not due to the process. It was due to the fact they were blasting out the product which had been stored in immense magazines where the material had solidified into a solid cake. It was an explosive material, and unfortunately the blasting material which they used to get it out had sufficient power to set the whole thing off.

The CHAIRMAN. You may proceed, Major.

Maj. BURNS. The Ordnance Department has been holding the No. 1 plant for some time in order to find out what the developments in America would be along the Haber process. We have made studies and designs of the plant, so that we could modify it and make it work in case it were necessary; but, fortunately, we do not believe we have to do that now, because the Atmospheric Nitrogen Corporation, which is a subsidiary of the Solvay Process Co., and the General Chemical Co., has developed at Syracuse, N. Y., a plant which can produce fixed nitrogen by this process. We visited it, and it is a very fine plant and is producing ammonia very satisfactorily. The Haber process is now an accomplished fact in America and is on a commercial basis. The Ordnance Department has therefore recommended to the Secretary of War that this No. 1 plant be disposed of.

The No. 2 plant was started as a direct result of very large requirements for explosives during the war. Shortly after we entered the war we found the requirements for explosives so colossal that they could not be met with T. N. T. or the approved explosive. We ascertained from the English how they were solving their explosives problem, and they were doing it by means of amatol, a combination of T. N. T. and ammonium nitrate. We therefore cast about for some scheme of getting large quantities of ammonium nitrate. We encountered two difficulties; one, a shortage of nitrates from Chile, and the other a shortage of ammonia. So the solution accepted was to put up a plant by the cyanamid process, which would not only take care of the shortage of Chilean nitrates, but it would also take care of the shortage of ammonia, as this plant could make both the ammonia and the nitrates from nitrogen which would be obtained from the air. So this No. 2 plant is absolutely a war plant, erected for the purpose of producing explosives.

The only company in America that understood the cyanamid process was the American Cyanamid Co., which has a plant at Niagara Falls, Canada, and therefore that company was called in to erect this plant. They started early in 1918 and had the plant practically ready for operation at the time of the armistice. The plant has been tested by a low capacity run, 20 per cent of its capacity, and the plant has proven very definitely that it can turn out the quality and quantity of the material that was desired.

The CHAIRMAN. Is that plant practically completed?

Maj. BURNS. Yes, sir; the plant is practically completed. It is ready to-day to turn out its full capacity of material.

The CHAIRMAN. If it should turn out fertilizer and it is desired at any time to begin to turn out explosives, what should be done with the plant.

Maj. BURNS. The product of the plant as it is now constructed is ammonium nitrate. That so far has not been accepted as a good fertilizer material. It has all the qualities for feeding plants, but, unfortunately, it absorbs moisture so rapidly when you put it into fertilizer that it makes the fertilizer gummy. So that you have got to produce some other material there, with the present state of knowledge, in order to fit into the fertilizer market.

You can take the fixed nitrogen that is produced there at a midway point and convert it into ammonium sulphate which is a thoroughly established fertilizer material. If you do this, you would have to put in an additional plant. So I think you could produce ammonium sulphate down there without in any way jeopardizing the value of the plant as a munitions plant.

The CHAIRMAN. Do you know how much the expense would be for making that conversion?

Maj. BURNS. For putting in an ammonium sulphate plant equal to the capacity of the No. 2 plant I believe would require a capital expenditure in the neighborhood of $3,000,000.

The CHAIRMAN. You may proceed, Major.

Maj. BURNS. There are some adjuncts to the No. 2 plant, namely, the Warrior-Gorgas plant, which has been under discussion a great deal, and the Waco quarry. The Waco quarry was constructed solely for the purpose of supplying limestone to the plant, limestone being one of the raw materials.

The Gorgas plant, which is about 90 miles away, and which is not shown on this map, is about 90 miles south of Muscle Shoals, on land owned by the Alabama Power Co.

There is a little history behind that which I think you ought to know. When it was decided to build the No. 2 plant it was found that they could erect the chemical end much quicker than they could the power end, so they endeavored to find how they could get power quickly. The Alabama Power Co. is the largest power producer in that region. At Gorgas, Ala., they already had constructed and in operation a 20,000-kilowatt plant located on the Warrior River. They had foundations laid and plans made for increasing its capacity when conditions warranted it. So the Ordnance Department went to them and asked them to what extent they could help in the furnishing of power. They stated that by increasing their transmission line to Gorgas they could guarantee to the Government almost at once power for construction purposes provided the Government would tie into their line with this 90-mile transmission line. They stated further that if the Government would increase at once the capacity of the plant at Gorgas they could guarantee power to the United States to the extent of the increase, or 30,000 kilowatts.

That agreement was finally entered into as outlined in contract T–69 and this 90-mile transmission line was erected, and this power plant addition was placed at Gorgas.

There has been mention made of condemning the land on which the Government-owned Gorgas plant is located. As a matter of fact, it is a part and parcel of the Alabama Power plant. It is all under the same roof. The boilers are fed by water through the same intakes. The ash-disposal system and the coal-supplying system are all one, so that it would be just like unscrambling an egg to try to separate those two plants. It is almost impossible.

The CHAIRMAN. Was that the purpose?

Maj. BURNS. No, sir; the idea was very clear-cut, in my judgment, in the minds of the contracting parties. The Alabama Power Co. agreed to put up this additional plant at cost plus 6 per cent for the Government and very definitely agreed when they did it that they would buy back from the Government

at a specified time this plant at a fair value, to be determined by a board of arbitrators, one of whom would be the Alabama Power Co.'s representative, one would be the Government's representative, and one would be selected by the two. In other words, by that contract we were able to sell back to the Alabama Power Co. this whole plant at its fair valuation.

The CHAIRMAN. Has any effort been made to sell it back?

Maj. BURNS. No definite offer because of the fact that the time limit imposed by the contract has not yet arrived.

The CHAIRMAN. In case the Government should decide to hold it or acquire it itself, how would those eggs be unscrambled?

Maj. BURNS. According to the contract the Government can not hold it itself.

The CHAIRMAN. It can not?

Maj. BURNS. No, sir; it must sell to the Alabama Power Co., and if the Alabama Power Co. can not purchase, then we have got to remove the plant and leave the land in a satisfactory condition.

The CHAIRMAN. That is one of the conditions of the contract.

Maj. BURNS. Yes, sir. I think the idea is very definitely fixed in the contract that in case the sale is not consummated to the Alabama Power Co. the Government has got to remove the plant.

The CHAIRMAN. So that, after all, it was only a temporary expedient.

Maj. BURNS. It was an expedient to get for the Government quick power in order to produce explosives at this No. 2 plant.

The CHAIRMAN. For war purposes.

Maj. BURNS. Yes, sir; and that seemed to be the very best solution that the Government could make at that time of this problem.

Mr. PARKER. Mr. Chairman, you might ask him if they have enough power without it.

The CHAIRMAN. I understand they are not running the plant at all. It is in a stand-by condition.

Mr. PARKER. And your own power plant is now completed.

Maj. BURNS. As it stands to-day, we could run our No. 2 plant at practically full capacity without this power plant at Gorgas, because in the meantime we have completed a 60,000-kilowatt plant at Muscle Shoals; but this arrangement with the Alabama Power Co. was of great help to the Government in the early days, because they were able to give us power at the No. 2 plant in May, 1918, or a few months after the plant was started, and we were never short of power as a result of that, in spite of the fact that our own steam plant at Muscle Shoals was not finally accepted until quite a long period of time after the armistice.

The CHAIRMAN. Go right ahead with your statement, Major.

Maj. BURNS. Those are the main projects of the Ordnance Department in that region. The rest of it has to do with the hydroelectric development in the Tennessee River, which has been handled by the Corps of Engineers.

The CHAIRMAN. And you have had little to do with that?

Maj. BURNS. I have had nothing directly to do with that, but, of course, I have heard a good deal of evidence submitted in regard to it; that is all.

The CHAIRMAN. Do you know how nearly completed is Dam No. 2?

Maj. BURNS. You appreciate, Mr. Chairman, that this is secondhand information you are getting from me, and the Corps of Engineers would be able to give you first hand information; but as I understand it from the records, all of the auxiliary construction work pertaining to Dam No. 2 has been completed, and approximately 30 per cent of the concrete work that goes in the dam.

Mr. MCKENZIE. Major, in connection with the construction of this plant on the land of the Alabama Power Co., you stated that it would give the Government the benefit of power much earlier than they could otherwise have obtained power to operate the nitrate plant; is that true?

Maj. BURNS. Yes, sir.

Mr. MCKENZIE. Is it more difficult to construct a steam power plant than it is a nitrate plant or a plant for the manufacture of fixation of nitrates?

Maj. BURNS. It took considerably longer time in our experience at the No. 2 plant to construct the power plant than it did to construct the nitrate plant.

Mr. MCKENZIE. That is not the question I asked you. Of course, that might be possible, but is there anything more difficult in the construction of a steam power plant than there is in the construction of a plant for the production or fixation of nitrogen?

Maj. BURNS. I can only answer that by saying that the No. 2 chemical plant or fixation plant was constructed in much less time than the steam plant that goes with it.

Mr. MCKENZIE. I understand that, but I am asking you now for your judgment on this proposition. Knowing the plants, having seen them and the construction of them, would you say that it is a more difficult proposition to construct an ordinary steam-power plant than it is to construct a plant for the fixation of nitrates?

Maj. BURNS. In my judgment, as a result of experience with plant No. 2, you can construct a nitrate plant by the cyanamid process quicker than you can construct the steam-power plant that would go with it.

Mr. MCKENZIE. At any rate, you had the power plant constructed at Muscle Shoals before you were ready to produce nitrates at the nitrate plant, did you not?

Maj. BURNS. No, sir; we did not have the steam-power plant at the nitrate plant constructed until long after the fixation plant had been constructed.

Mr. MCKENZIE. I understand; but when did you have this experimental test?

Maj. BURNS. The plant was producing fixed nitrogen about the time of the armistice, and we ran it through this small test, I think, in January and February, 1919.

Mr. MCKENZIE. Did the Government or the Ordnance Department proceed immediately with the construction of the power plant in connection with the construction of the nitrate plant?

Maj. BURNS. Yes, sir.

Mr. MCKENZIE. How long after they began that construction did they enter into this contract with the Alabama Power Co. to take power from the company and also to build an addition to their plant?

Maj. BURNS. I think it was all taken care of at practically the same time. You see, the Alabama Power Co. was able to supply us with power much quicker, because this Gorgas effort was only an expansion of the plant which they had there. Furthermore, they had some foundations already constructed for this additional plant, which they had in mind for their own purposes.

Mr. MCKENZIE. Of course, as I remember it, it was the understanding, at least of the Members of Congress, and I assume it was also the understanding of the Ordnance Department, that at Muscle Shoals there could be developed sufficient power to take care of this particular proposition. Was not that your understanding?

Maj. BURNS. Of course, you can develop steam power at Muscle Shoals to almost unlimited extent, I imagine.

Mr. MCKENZIE. Yes; but notwithstanding that fact, this particular contract was entered into with the Alabama Power Co. to take power from the company, build a transmission line 88 miles long, build an addition to the plant in such a way that, as you have suggested, it is almost impossible to unscramble it, and the only possible chance for the Government to get free from this proposition is to sell it to the Alabama Power Co.

Maj. BURNS. In my judgment it ought to be sold to the Alabama Power Co.; yes, sir.

Mr. MCKENZIE. Is it possible to do anything else?

Maj. BURNS. Not in my judgment.

Mr. MCKENZIE. Of course, this is all water that has gone over the dam, but it has something to do with this proposed proposition which we are now considering. That being true, and with this contract entered into by the Ordnance Department with the Alabama Power Co. and the building put up in such a way that it is absolutely impossible to separate the Government's interests from those of the Alabama Power Co., we are asked now to consider that as one of the items that enter into the proposal submitted by Mr. Ford; and, according to your testimony, we would be absolutely unable to deliver to him anything of any value unless we bought out the interest of the Alabama Power Co. in this particular plant on the Warrior River; is that true?

Maj. BURNS. That is exactly the way I see it; yes, sir.

Mr. MCKENZIE. Of course, I assume——

Maj. BURNS (interposing). I would like to point out, Mr. McKenzie, that if you tried to buy out the Alabama Power Co. at Gorgas, you would have to spend a great deal of money.

Mr. MCKENZIE. I understand that.

Maj. BURNS. And it would, probably, run into the millions.

Mr. MCKENZIE. I assume that is true. Then it appears to me that with the inclusion of this particular project in the proposal of Mr. Ford, we are attempt-

ing to do something that is practically impossible for us to do without great loss to the Government, in so far as it relates to this proposal.

Maj. BURNS. In my judgment, that is entirely correct, sir.

Mr. MCKENZIE. I assume, and I think it is fair to assume, that the Ordnance Department, when the department entered into this contract, felt they were conserving the interests of this Government.

Maj. BURNS. Yes, sir.

Mr. MCKENZIE. Do you remember the name of the officer that had charge of this particular proposition and prepared this contract?

Maj. BURNS. The contract was signed by William Williams, but the real negotiating officer in the case was Col. J. W. Joyes, of the Ordnance Department.

Mr. MCKENZIE. This officer, Mr. Williams, as I take it, was an emergency officer commissioned in the Ordnance Department as an attorney.

Maj. BURNS. Yes, sir.

Mr. MCKENZIE. Was he a man who had had large experience?

Maj. BURNS. I only know him more or less casually, but I understand he was a very good officer.

Mr. MCKENZIE. However, he involved the Government in a contract which provided that the Government should put up all the money and then pay this company a 6 per cent cost plus profit, and permitted them to build an addition onto their plant in such a way that when the Government got through using it there would not be anything left except to give it to the Alabama Power Co. at such price as the Alabama Power Co. might see fit to offer; is not that the situation?

Maj. BURNS. No, sir. The Alabama Power Co. has got to pay a price that will be fixed by a board of arbitrators; and, as I said before, they have representation on the board of arbitrators, the Government has a representative on the board of arbitrators, and the two then select a third; so that the Alabama Power Co., as I understand, has got to pay to the Government the fair value for its investment at Gorgas.

Mr. MCKENZIE. That is, the fair salvage value. That is what that means.

Maj. BURNS. No; the understanding is not that they shall pay the scrap value; the understanding is they will pay the fair, going-concern value.

Mr. MCKENZIE. If that should happen, in my judgment, it would be the first example of any sale of Government property where any such consideration entered into the transaction.

Maj. BURNS. It is my understanding that that was the idea, and I believe that really you would get a better return from that Gorgas plant than you will from 99 per cent of the Government undertakings that we have had to salvage as a result of the end of the war.

Mr. MCKENZIE. Just one other question and then I will conclude. If I understand your testimony correctly, it is your judgment that the inclusion of this particular plant in the so-called Henry Ford proposal makes it an absolutely impracticable proposition for Congress to undertake.

Maj. BURNS. Yes, sir; it does, in my judgment.

Mr. MCKENZIE. I might put just one other question to you. Would you consider that a complete barrier to carrying out this proposal?

Maj. BURNS. As an ordnance officer who is affiliated with ordnance contracts and whose duty it is to live up to its contracts, if I had to vote on the Ford offer I would vote against it on that one point.

Mr. MCKENZIE. And unless that can be eliminated by further conference between Mr. Ford and the representatives of this Government, you say unhesitatingly we should not consider the proposition.

Maj. BURNS. I do; yes, sir.

Mr. GREENE. I think Mr. McKenzie has brought out pretty much everything I wanted to ask you, Major. It is apparent, I suppose, by the contract with the Alabama Power Co., providing for the additional plant to be so blended with the original plant, that they could not well be unscrambled, as you say, that the Alabama Power Co. then regarded it as a probable addition to its plant after the war emergency was passed.

Maj. BURNS. Yes, sir.

Mr. GREENE. And it was built with that prospective value in mind.

Maj. BURNS. Yes, sir; they have been using it as part of their system since the war and have been paying us a rental for it.

Mr. GREENE. What was the idea, then, in thinking that they would be likely to refuse to take it, and that they should have to be put to the expense of removing it from their land?

Maj. BURNS. I do not think it was ever anticipated they would refuse to take it.

Mr. GREENE. That was only an alternative in the contract?

Maj. BURNS. Yes, sir; that was an alternative in case something happened that would prevent their taking it.

Mr. GREENE. Is there any way to separate the interests of the United States and of the Alabama Power Co. in this plant; that is, its physical structure, if we were to sell our plant to Mr. Ford?

Maj. BURNS. I do not believe so, sir. I have here a picture of the plant which might help to answer that question.

The CHAIRMAN. Maj. Burns, I will ask you to explain this picture so that the members of the committee may understand exactly what the situation is at the plant.

Maj. BURNS (referring to picture). This is a picture of the plant at Gorgas. The part to the right as you look at the picture is the part that was constructed by the Alabama Power Co. and was in operation when we went to Gorgas. The part to the left is the plant that was constructed for the account of the United States. So that you can see that it is just one plant, all under the same roof. Each interest has a boiler plant and a generating plant included here. However, the electricity is all handled over the same switchboard within the plant. We have a substation here owned partly by the Alabama Power Co. and partly by the Government. The water for the feeding of the boilers, to both sets of boilers, all comes through the same intake from the Warrior River. The ash handling equipment is common, the coal feeding equipment is common and upon the hill here we have a village, part of which is Alabama Power Co. property and the other part Government property.

Mr. GREENE. How can the United States deliver title to Mr. Ford to plant No. 2 with the condition as it is down there now?

Maj. BURNS. As I understood the Judge Advocate General's Department it would be necessary to institute condemnation proceedings, and get title, and then turn it over to Mr. Ford, and, of course, those condemnation proceedings would require us to pay to the Alabama Power Co. a fair value for what property we took over from them, and what damage we caused to them. I personally think those damages would be very high.

The CHAIRMAN. Did not the Acting Judge Advocate General take the position that the Alabama Power Co. had no claim whatever down there under the law, and that their contract with the Government is absolutely void?

Maj. BURNS. I do not think he took the attitude that we would not have to pay to the Alabama Power Co. for any property we took from the Alabama Power Co. or for any damage we inflicted on the Alabama Power Co. He claimed that the option to purchase of the Alabama Power Co. was of no value, as I understand it.

There is another point covering the necessity of this Gorgas plant that I would like to point out. We not only needed power for operation purposes at nitrate plant No. 2 when it was completed, but we also needed power to assist in the construction of it, and this contract with the Alabama Power Co. allowed us to get power, as I said before, in May, 1918, or shortly after construction work at Muscle Shoals was undertaken.

Mr. HULL. Major, following the question asked by Mr. Greene, are you not mistaken in saying that we can not get possession of No. 2. The No. 2 plant, as I understand it, has nothing to do with the development at Gorgas.

Maj. BURNS. I did not understand Mr. Greene's question that way. I thought he meant with reference to a clear title to the Gorgas power plant.

Mr. HULL. No; he said the No. 2 plant.

Maj. BURNS. We can give clear title, in my judgment, to the No. 2 plant.

Mr. HULL. That is what I thought.

Maj. BURNS. Yes, sir; we can do that.

Mr. HULL. That is absolutely an entirely different proposition.

Maj. BURNS. That is correct.

Mr. HULL. I just wanted to clear that question up. You were present the other day and heard Col. Hull, the Acting Judge Advocate General, say that we could give possession of the Gorgas plant if we wished to by a certain line of procedure, and that there was nothing in the contract that would prevent it. That was his testimony, was it not?

Maj. BURNS. Yes, sir; that was his testimony.

Mr. HULL. What have you to say to that?

Maj. BURNS. It is all a question of judgment. I do not think it can be done.

Mr. HULL. Are you a lawyer?

Maj. BURNS. No, sir.

Mr. HULL. It is quite evident that the two departments of the Government, the Ordnance Department and the Judge Advocate General's Department, are not unscrambling these eggs very well for the committee.

Maj. BURNS. We are doing the best we can.

Mr. HULL. Right along that same line, now, what is the reason, and there must be a reason, for Mr. Ford asking for this plant at Gorgas? As I understand it, if I understand it properly, you have a complete steam plant at No. 2 in operation to-day; is not that true?

Maj. BURNS. Yes, sir; not in operation, but ready to operate.

Mr. HULL. Are you not selling power from it?

Maj. BURNS. The plant is leased, but the Alabama Power Co. is not operating it to-day, because they do not need to, because of the fact that the water supply down there is sufficient to take care of the demand by means of water-power energy.

Mr. HULL. They are operating, then, your end of the plant at Gorgas?

Maj. BURNS. Yes, sir.

Mr. HULL. They are operating that plant, and you are receiving some revenue from it?

Maj. BURNS. Yes, sir; a large part of the year.

Mr. HULL. Do you know why they want this plant at Gorgas? I want to know the reason.

Maj. BURNS. It is not a vital part of the Ford offer, in any way.

Mr. HULL. It is not.

Maj. BURNS. I can not see how it would affect the Ford offer if it were left out.

Mr. HULL. Then he could carry out the intent of his contract without this?

Maj. BURNS. Yes, sir; in my judgment.

Mr. HULL. As I understand it, if I have this thing visualized correctly, this plant at Gorgas is some 80 or 90 miles away.

Maj. BURNS. That is correct; yes, sir.

Mr. HULL. And it has to do with a steam plant which would naturally supplement the water power, but if I understand it correctly, it is not necessary or vital, as you say, to the Ford proposition, because at the No. 2 plant you have a steam plant that supplements the water power there.

Maj. BURNS. Yes, sir; we have a steam plant at nitrate plant No. 2 of 60,000 kilowatt capacity.

Mr. HULL. Now, getting back to something that you probably know more about than the rest of us, and that is the chemical end of the proposition of Mr. Ford, there are two things you can manufacture at this plant No. 2, ammonia nitrate and ammonia sulphate; is not that true?

Maj. BURNS. The plant is now equipped to produce ammonium nitrate. It is also equipped to produce ammonia, but it is not equipped to convert the ammonia into ammonium sulphate.

Mr. HULL. And ammonium nitrate is the element we have to have for high explosives.

Maj. BURNS. That was one of the high explosives we used in great quantities during the World War.

Mr. HULL. Is that an explosive itself?

Maj. BURNS. Yes, sir.

Mr. HULL. It would explode without being mixed with other elements?

Maj. BURNS. It would, but it is very difficult to explode. It would be classed as an explosive that is very hard to detonate.

Mr. HULL. It would be very hard to detonate?

Maj. BURNS. Yes, sir; you would never put it in a shell by itself.

Mr. HULL. How long would it take if you had this plant running or if Mr. Ford had it running, producing ammonium sulphate, to convert it back to where it is now and produce ammonium nitrate?

Maj. BURNS. That is a question of judgment.

Mr. HULL. Yes; I know that.

Maj. BURNS. I should say it would take a month or two. That would be my estimate.

Mr. HULL. What would be the probable expense?

Maj. BURNS. If he kept the plant in a stand-by condition the expense would be more or less negligible.

Mr. HULL. That is, if he kept it running or in shape to convert.

Maj. BURNS. Yes, sir. I would like to point out, Mr. Hull, that the Ordnance Department is primarily interested in the development of nitrogen fixation. It is not so much worried about changing the fixed nitrogen, once that is an accomplished fact, into the various forms that are necessary for the manufacture of explosives. In other words, if the Ordnance Department were assured that that plant would continue as a fixation plant, I do not think it would worry very much about keeping the nitric-acid plant and the ammonium-nitrate plant going.

Mr. HULL. That is a very good answer, and that is just what I wanted to know. I am more concerned about this whole matter from a national-defense standpoint, and I want to keep something so that we may have an independent source of nitrates. If we accepted the Ford offer, there would be no question but what we would always have there an independent source of nitrogen in this country.

Maj. BURNS. Yes, sir; the Ford offer, as I read it, has two very important advantages from the standpoint of nitrogen preparedness. In the first place, it guarantees to keep that plant or its equivalent in stand-by and ready to produce the quantity that it was designed for for a period of 100 years. That certainly is a big help to the Ordnance Department. Then it agrees to operate the plant to its present approximate capacity. There is a little doubt in my mind as to just what that means. If it means they are going to produce anything except fixed nitrogen, it is practically of no use to the Ordnance Department. In other words, if they are going to produce such a thing as phosphoric acid, that will not help us, but if they are actually going to continue making fixed nitrogen, it would be a very material help to the Ordnance Department and to the Government from the standpoint of nitrogen preparedness.

Mr. HULL. Under the contract, as I understand it, if they in any way converted this plant so that we would not have it available, we would have the right to stop them, is not that true?

Maj. BURNS. He guarantees to maintain this plant or its equivalent in stand-by. That is a very firm guaranty and would assure us always of having that plant ready to operate. Now, over and above that, he may or may not guarantee to run it as a nitrogen fixation plant. I think you can interpret it very readily to the effect that he does agree to run it as a nitrogen fixation plant. If he does, that is a very great additional benefit to the Government from the standpoint of preparedness.

Mr. HULL. You used the word "stand-by"; you mean if he is running it, it would be in stand-by?

Maj. BURNS. No, sir; if he were running it, it would not be, although it would be in the equivalent of stand-by. What I mean by stand-by is that you are maintaining the plant ready for operation but are not operating it.

Mr. HULL. That is what I understand by stand-by, but, unquestionably, he intends to run it; and as I understand it, he would carry out his contract to run it so that you could convert it at any time into an ammonium nitrate plant.

Maj. BURNS. As I understand it, he makes these two stipulations. One is that he will keep that plant or its equivalent for 100 years ready to produce its present rated capacity of explosive, and the other is that he agrees to operate it to its approximate present capacity for the production of fertilizer.

Mr. PARKER. And fertilizers may not mean nitrates?

Maj. BURNS. That is the fear I have.

Mr. PARKER. You think he might operate it for some other sort of fertilizer?

Maj. BURNS. Yes, sir.

Mr. HULL. You have no doubt in your mind but what he can take plant No. 2 at the present time, when equipped to manufacture ammonium nitrate, and convert it into ammonium sulphate, which we ordinarily say is fertilizer, but which is one of the ingredients of fertilizer.

Maj. BURNS. There is no doubt in the world that the plant can be made to produce ammonium sulphate.

Mr. HULL. There is not any doubt about it?

Maj. BURNS. No, sir. There is a doubt as to the cost at which he will be able to produce it.

Mr. HULL. That is a very important question to have answered, because it has been called into question very often as to whether he could manufacture it or not.

Maj. BURNS. Physically it can be done; economically it is doubtful.

Mr. HULL. There is no doubt but what he can do it if he tries to.

Maj. BURNS. There is no doubt in my mind.

Mr. HULL. Now, plant No. 1, which is the Haber process, as I understand it, he takes over also. Could this plant be converted, after being made a success, to manufacture ammonium nitrate into an ammonium sulphate plant?

Maj. BURNS. Yes, sir; that plant can be reconstructed and can be made to produce ammonium sulphate.

Mr. HULL. Major, there has been some question in regard to the cost of this ammonium sulphate manufactured at plant No. 2. As I understand it, and if I am not correct I want you to correct me, ammonium sulphate is selling around $50 a ton at the present time. Is that true?

Maj. BURNS. That is correct; yes, sir.

Mr. HULL. At times it was sold, after the war, if I remember aright, at $90.

Maj. BURNS. After the war it got up as high as $150 a ton.

Mr. HULL. Yes; it went as high as $150 a ton.

Maj. BURNS. Yes, sir.

Mr. HULL. And the present price is $50?

Maj. BURNS. Yes, sir.

Mr. HULL. What is your opinion as to Mr. Ford being able to stabilize that price at $50 a ton or to be able in the future to reduce it. Of course, I understand this is simply asking for your opinion, but you ought to know something about the expense.

Maj. BURNS. In my judgment, in accordance with our estimates, the price at which he can produce ammonium sulphate, exclusive of interest, taxes, insurance, and obsolescence of the plant, would be approximately $48 per ton to-day. So that when you add the various overhead charges that a business concern would have to add he could hardly produce ammonium sulphate for less than $60 a ton, and that also is based upon power at three-fourths of a mill per kilowatt hour.

Mr. HULL. Using power at three-quarters of a mill per kilowatt?

Maj. BURNS. Yes; so, I honestly do not believe Mr. Ford, with the present knowledge of the game, would be able to materially reduce the price of fertilizer. I do believe, however, he could prevent these excessive increases in prices that sometimes come about.

Mr. HULL. He could stabilize the price.

Maj. BURNS. Yes, sir; I believe he could stabilize the price of nitrogen compounds.

Mr. HULL. Of course, you know nothing as to his ability to decrease the cost through his ability to increase production, etc. You know nothing about that.

Maj. BURNS. No; but I do believe there is quite a possibility of that. I believe that we will get big benefits as a result of chemical research.

Mr. HULL. Of course, the question of salaries and the question of the water-power rates that he would pay to the water-power company of his would all enter into that question?

Maj. BURNS. Yes, sir. The price of power is a very important matter in the cost of the fertilizer compound that could be produced at Muscle Shoals.

Mr. HULL. And by the discovery of new processes and new inventions, and by increased production, he might be able to decrease the price very materially.

Maj. BURNS. He might be able to decrease the price. I do not know about the "very material" part of it.

Mr. HULL. Of course, that is a matter of opinion.

Maj. BURNS. There are certainly great possibilities that chemical research will be a big aid in the fertilizer business.

Mr. HULL. Of course, that is all up to Mr. Ford and is a matter of opinion, and I simply wanted your ideas in regard to the cost under the present facilities that exist at plant No. 2, and you still insist that he could carry out his contract and do all this work at plant No. 2 and No. 1 without the addition of the Gorgas plant.

Maj. BURNS. Yes, sir.

Mr. HULL. That is all.

Maj. BURNS. I would like to point out also, with reference to the price of ammonium sulphate, while to-day it is selling for $50, the prewar average over four or five years was $60 a ton.

Mr. JAMES. The United States furnished all of the money and the Alabama Power Co. did not furnish a cent, but had a 6 per cent cost-plus contract.

Maj. BURNS. That is my understanding; yes, sir.

Mr. JAMES. And yet the contract is so drawn that the United States is tied up in such a way that it could only sell to one concern, and that is the concern that had already made several hundred thousand dollars out of the deal; is that correct?

Maj. BURNS. Not several hundred. They made $225,000.

Mr. JAMES. But it was so tied up that the only concern that could buy from the United States was the concern that had made $225,000 without the investment of a dollar.

Maj. BURNS. That is correct; yes, sir.

Mr. JAMES. Is Col. Joyes still in the service?

Maj. BURNS. Yes, sir.

Mr. JAMES. Do you know what Col. Williams is doing at present?

Maj. BURNS. I understand he has just left for a five-months trip to the Orient.

Mr. JAMES. Do you know of any particular concern that he represented before he went into the Army?

Maj. BURNS. No, sir; I do not.

Mr. JAMES. Do you know any particular concern he represents now?

Maj. BURNS. I do not.

Mr. JAMES. You stated that you do not think Mr. Ford can cut the price very materially on fertilizer.

Maj. BURNS. That is correct; yes, sir.

Mr. JAMES. Do not things of that kind depend a great deal upon the man himself?

Maj. BURNS. Somewhat; yes, sir; but, of course, there are always certain quantities of raw materials you have got to put into your finished product. He can not get greater efficiency than the chemical equation demands, so that there is that limitation. A man, of course, can use labor efficiently or inefficiently, and he can likewise use materials efficiently or inefficiently.

Mr. JAMES. A short time ago the Lincoln Motor Co. failed, and Mr. Ford bought it in the other day at $8,000,000, and I suppose you have seen where he states he is going to cut the price of that automobile $1,000, have you not?

Maj. BURNS. Yes, sir; but, of course, while I have very little association with an automobile, I understand that the price of the Lincoln car had not been reduced as the price of other cars had been reduced, and that this reduction of $1,000 really only puts it in line with the reductions that have taken place in the case of the Cadillac, which is a comparable car.

Mr. JAMES. Where is Col. Joyes located at the present time?

Maj. BURNS. At the Munitions Building, in Washington.

Mr. KEARNS. What was the value of the plant of the Alabama Power Co. when the Government built this addition to its plant?

Maj. BURNS. It would be very hard to give that information. Their generating plant amounted, in capacity, to 20,000 kilowatts, and ours had a capacity of 30,000 kilowatts, so that it had two-thirds as much capacity as our own. Our properties down there cost about $4,000,000—that is, our steam plant—so that on that basis their steam plant alone would be worth two-thirds of $4,000,000, or approximately $2,667,000. It probably did not cost that much, but in addition to that they have transmission lines and stations that they erected to tie in with their Gorgas plant.

Mr. KEARNS. That was at the expense of the Alabama Power Co.?

Maj. BURNS. Yes.

Mr. KEARNS. What was the Alabama Power Co. doing at the time the Government entered into the contract with them?

Maj. BURNS. They were manufacturing and selling power to the neighborhood surrounding Birmingham, Ala.

Mr. KEARNS. You think they had an investment of two or three million dollars?

Maj. BURNS. I think they had an investment in excess of $3,000,000 in connection with their Gorgas plant.

Mr. KEARNS. What did they do to earn this fee of $285,000?

Maj. BURNS. They built that plant for us.

Mr. KEARNS. What plant?

Maj. BURNS. This Gorgas plant I was speaking about.

Mr. KEARNS. The Government paid for it, did they not?

Maj. BURNS. They built it; we had a contract with them for the building of the plant.

Mr. KEARNS. The Government furnished the money, did they not?

Maj. BURNS. The Government furnished the money, but the power company furnished practically everything else.

Mr. KEARNS. What did they furnish?

Maj. BURNS. They furnished their knowledge. That was the principal thing they furnished, of course.

Mr. KEARNS. The men who did the work were employed by the Government?
Maj. BURNS. They were paid by the Government.
Mr. KEARNS. And the materials were paid for by the Government?
Maj. BURNS. Yes, sir.
Mr. KEARNS. The machinery that went into the manufacture of that product was paid for by the Government?
Maj. BURNS. Yes.
Mr. KEARNS. The Alabama Power Co. paid nothing?
Maj. BURNS. That is correct, from the standpoint of dollars.
Mr. KEARNS. Has the Alabama Power Co. any interest in any of the other projects in and around Muscle Shoals?
Maj. BURNS. I could not tell you that; I do not know.
Mr. MILLER. Major, on this Warrior plant the Government has now spent $4,979,000 and upward, according to the report of the Secretary of War. You will find that on page 5 of the report of the Secretary of War, near the top of page 5.
Maj. BURNS. Those figures are a little bit high, Mr. Miller.
Mr. MILLER. That is all we have to guide us.
Maj. BURNS. You will find those costs of the projects analyzed on page 24 of the report.
Mr. MILLER. The Secretary of War has reported to us in this language: "The total cost of the plant was $4,979,782.33." That is the report made to us by the Secretary of War. That is on page 5 of his report. Then on page 24 of his report he analyzes the items that constitute that amount, and informed us that the total is the same sum, $4,979,782.33.
Maj. BURNS. Of course, the Secretary of War's report tries to generalize the matter. But if you put it this way, that the Government spent $4,979,782.33 for the purpose of getting power from this Gorgas plant, then you are correct.
Mr. MILLER. Let me call attention to this fact: That these figures, $4,979,782.33, are the figures of the Ordnance Department. You will see on page 23, at the top of the page, the report of the Ordnance Department to the Secretary of War.
Maj. BURNS. That is correct. The point I want to make is this—that all that money was not spent at Gorgas. It includes the transmission lines and the substations at Muscle Shoals.
Mr. MILLER. The transmission line goes along with the Gorgas plant?
Maj. BURNS. Yes, sir.
Mr. MILLER. We put $4,979,782.33 into an enterprise and so ingeniously intertwined it with the lines of the Alabama Power Co. that you say it can not be unscrambled?
Maj. BURNS. Yes, sir.
Mr. MILLER. Then we have this situation. The Government put this amount of $4,979,782.33 into this one plant at Warrior to furnish power to nitrate plant No. 2, built the power plant, the nitrate plant No. 2, and connected it up.
Maj. BURNS. And also to furnish additional power required over and above——
Mr. MILLER (interposing). The capacity of the steam plant at plant No. 2 has double the capacity of the Warrior plant?
Maj. BURNS. That is correct, but the original engineering estimate was that the No. 2 plant would require in the neighborhood of 90,000 kilowatts, and when we add the Warrior plant and the steam plant at No. 2 they will produce 90,000 kilowatts.
Mr. MILLER. According to that the practical operation of plant No. 2 does not produce enough power in its own unit to run it?
Maj. BURNS. Not quite; but the engineer's estimate at the start was that the requirements would be 90,000 kilowatts, and the plant that was constructed was more efficient in the use of power than was planned for, so that the 60,000 kilowatts produced at No. 2 plant will almost completely run the nitrate plant at No. 2.
Mr. MILLER. Then there are three distinct power projects for the operation of this No. 2; first, the Warrior plant constructed at a cost of $4,979,782.33?
Maj. BURNS. Yes, sir.
Mr. MILLER. Then we built the power plant at No. 2 plant itself?
Maj. BURNS. Yes, sir.
Mr. MILLER. About how much did that cost, approximately?
Maj. BURNS. Approximately $12,000,000.
Mr. MILLER. That is $12,000,000 more. Then we have put $16,000,000 into a dam to furnish a third element for the operation of plant No. 2?

Maj. BURNS. That was not linked in with No. 2.
Mr. MILLER. Then it was found that there was enough power otherwise to drive plant No. 2?
Maj. BURNS. Yes, sir.
Mr. MILLER. Then the $16,000,000 you put into Dam No. 2 in nowise was necessary to furnish power to operate nitrate plant No. 2?
Maj. BURNS. No, sir; it was not.
Mr. MILLER. Then clearly there must have been some other motive for the construction of that dam if we already had power enough to operate all our units at the Muscle Shoals enterprise generally. There must have been some other pressing reasons that compelled us to start on that dam and put $16,000,000 into it and require $25,000,000 more to complete it?
Maj. BURNS. I do not know about that. I do not know what the purpose was with reference to that.
Mr. MILLER. I see your report is to the effect that you can scrap or sell or salvage the Warrior plant at approximately $3,000,000.
Maj. BURNS. That is our estimate of it.
Mr. MILLER. Then the Warrior plant can be disposed of to-morrow—that is, that single item can be disposed of for three-fifths of what Mr. Ford offers for the whole thing?
Maj. BURNS. In my judgment; yes, sir.
Mr. MILLER. Probably we could get more than $3,000,000?
Maj. BURNS. In my judgment, $3,000,00 is about what we would be able to get.
Mr. MILLER. You say you think it will cost a very substantial sum—I infer that from what you say—to acquire the Alabama Power Co.'s rights in the Warrior plant.
Maj. BURNS. Yes, sir; I think so.
Mr. MILLER. And the transmission line of 88 miles extending from that plant to nitrate plant No. 2?
Maj. BURNS. I do not believe it would cost so very much to get the property rights to the transmission line, but I do feel it would cost a great deal to get the property rights to the Gorgas plant.
Mr. MILLER. Did we furnish the wires?
Maj. BURNS. We paid for everything for the transmission line except the land.
Mr. MILLER. Except the right of way and the easements?
Maj. BURNS. Yes, sir.
Mr. MILLER. You say that particular item would not be very expensive?
Maj. BURNS. I do not think so. The condemnation proceedings, I think, would only affect the price of the land. There would be no additional damages, that I can see.
Mr. MILLER. What I am getting at is to see what the Government is getting out of this proposition. We have in the neighborhood of $89,000,000 invested in that enterprise down there, exclusive of the $16,000 000 we put into the Wilson Dam.
Maj. BURNS. Yes, sir.
Mr. MILLER. And we are getting $5,000,000 for that?
Maj. BURNS. Less the money you will have to spend to acquire these rights.
Mr. MILLER. Less the money necessary to acquire the rights of the Warrior plant?
Maj. BURNS. Yes, sir.
Mr. MILLER. And the overflow damages at Dam No. 3?
Maj. BURNS. Of course, that ties in more with the power proposition than with the nitrate proposition.
Mr. MILLER. For which the engineer department estimates the cost to be $2,000,000?
Maj. BURNS. Yes. sir; according to their report.
Mr. MILLER. Then the $5,000,000 Mr. Ford is to pay for the plant would be either entirely or in large portion absorbed in paying for the Alabama Power Co.'s rights in the Warrior plant and paying for the overflow damages at Dam No. 3?
Maj. BURNS. My judgment on that is that it would.
Mr. MILLER. So the enterprise on which the Government has put $89,000,000, in order to comply with the conditions of Mr. Ford's contract, we will get nothing out of, substantially, except the nitrate plant No. 2 in a stand-by condition, as a matter of nitrate preparedness for war.
Maj. BURNS. As I understand it, that is correct; yes, sir.

Mr. MILLER. You have said that the steam plant has a 30,000 kilowatt output?
Maj. BURNS. Yes, sir.
Mr. MILLER. And the steam plant at nitrate plant No. 2 has 60,000 kilowatt output, or double the capacity of the other steam plant?
Maj. BURNS. Yes, sir.
Mr. MILLER. That is 90,000 kilowatts altogether?
Maj. BURNS. Yes, sir.
Mr. MILLER. Have you an estimate of the kilowatt output of Dam No. 2? It is 100,000 horsepower, is it not?
Maj. BURNS. The Chief of Engineers stated it would have a primary capacity of 100,000 horsepower and a secondary capacity to the extent of 440,000 horsepower.
Mr. MILLER. You say it will cost in the neighborhood of $3,000,000 to convert the ammonium nitrate plant into an ammonium sulphate plant?
Maj. BURNS. To put in the ammonium sulphate plant there, in my judgment, would cost about $3,000,000.
Mr. MILLER. Would that be in the nature of a new plant or an alteration of an existing plant?
Maj. BURNS. I think it would be substantially a new plant.
Mr. MILLER. Then we would be confronted with this situation, that if Mr. Ford should undertake to alter the process at plant No. 2 to change the production of ammonium nitrate into ammonium sulphate, we would have to transfer that back and rework the plant in case of the necessity for the production of ammonium nitrate?
Maj. BURNS. As I read Mr. Ford's offer, it is contemplated that he would keep the plant in good condition and use it for fertilizer output.
Mr. MILLER. Then you think he is obligated to continue plant No. 2 for the output of ammonium nitrate?
Maj. BURNS. Yes, sir.
Mr. MILLER. He can erect a plant or do anything he wants to for the conversion of the nitrate into sulphate?
Maj. BURNS. That is the way I understand it.
Mr. PARKER. I wish you would tell me briefly what the Haber process is.
Maj. BURNS. It is based upon the welding together of nitrogen gas which you get from the air and hydrogen gas which you get from water. When these gases are well purified and brought together in the presence of a catalyst at a high temperature and pressure they combine and form ammonia.
Mr. PARKER. What materials do you use in that process?
Maj. BURNS. The raw materials are air, water, coke, power, the catalyst, and some chemical purifying agents.
Mr. PARKER. What is your catalyst? Do you use a platinum screen?
Maj. BURNS. No, sir; not for the manufacture of ammonia. It is a secret compound, but its basis is iron.
Mr. PARKER. Is it wasted, so it has to be paid for?
Maj. BURNS. It wastes to some extent. It is very expensive in the first installation, but its consumption, if well treated, is not so very great.
Mr. PARKER. You make use of water, do you not?
Maj. BURNS. We have to get hydrogen from the water.
Mr. PARKER. How do you get that?
Maj. BURNS. By the water-gas method, heating the coke and spraying the water on it, thus separating the water into its gases.
Mr. PARKER. That becomes hydrogen and oxygen?
Maj. BURNS. Yes, sir; hydrogen, oxygen, carbon monoxide, and the rest of them.
Mr. PARKER. How do you get rid of the carbon monoxide?
Maj. BURNS. It is burned into carbon dioxide and then separated from the gases by a purification system. Water and caustic soda are used to absorb the carbon dioxide.
Mr. PARKER. That is another material?
Maj. BURNS. That is one of the chemicals used for purification purposes.
Mr. PARKER. Is there much cost in these materials—the chemical agents and the catalyst?
Maj. BURNS. The costs of your materials in the Haber process are not so very great, but your capitalization cost is quite large and your upkeep charge is high, because the process is a very complicated chemical one.
Mr. PARKER. Is that process being used at Syracuse?
Maj. BURNS. It is; yes, sir.

Mr. PARKER. Then it is not secret anymore? You know what the real process is, since the war ended, do you not?
Maj. BURNS. It is protected by patents, of course, in the name of this company.
Mr. PARKER. Have they the patents?
Maj. BURNS. Yes, sir.
Mr. PARKER. That the Government can not use?
Maj. BURNS. That is correct; except in case of necessity, undoubtedly the Government could use them.
Mr. PARKER. But they have no present right to use them?
Maj. BURNS. No, sir; I do not think they have.
Mr. PARKER. With what commercial success is the Syracuse company making that product?
Maj. BURNS. They are making approximately 10 tons per day of anhydrous ammonia.
Mr. PARKER. Do they make it at commercial prices?
Maj. BURNS. We have never seen their cost sheets, and do not know about that. But they are continuing in the operation of their plant, so they must be making a commercial success of it.
Mr. PARKER. Do they sell it?
Maj. BURNS. Yes, sir; they sell it as anhydrous ammonia.
Mr. PARKER. At what price?
Maj. BURNS. The present price is about 30 cents a pound.
Mr. PARKER. You are not concerned with other matters, if you can get anhydrous ammonia in sufficient quantities?
Maj. BURNS. No, sir; that is the part of the process we are most anxious about, the fixing of the nitrogen.
Mr. PARKER. The 10 tons a day that they produce would be a very small amount of the consumption of ammonia in the United States?
Maj. BURNS. Yes, sir; it is.
Mr. PARKER. What per cent—not 1 per cent, is it?
Maj. BURNS. Putting it on a nitrogen basis, the total consumption of inorganic nitrogen in America is in the neighborhood of 180,000 tons. They would make about 3,600 tons, so it is 2 per cent of the total production of inorganic nitrogen.
Mr. PARKER. That is a very satisfactory result, and something that did not occur until after the war?
Maj. BURNS. That is very satisfactory; yes, sir.
Mr. PARKER. That would make a very large amount of product which is easily converted into sulphate of ammonia or any other material used for fertilizer?
Maj. BURNS. Yes, sir; it is easily converted into ammonium sulphate.
Mr. PARKER. At what price could they make ammonium sulphate?
Maj. BURNS. I said the price of anhydrous ammonia in the market is 30 cents a pound. I do not know what the Atmospheric Nitrogen Corporation is paying as the production cost of ammonia.
Mr. PARKER. Can they properly change that into ammonium sulphate at present prices, or is the ammonium sulphate cheaper?
Maj. BURNS. They could not profitably do it in my judgment because we do not get as much for nitrogen in the form of ammonium sulphate as in the form of anhydrous ammonia.
Mr. PARKER. Do you know wherein plant No. 1 is defective, and what the remedy is for it?
Maj. BURNS. We do; yes, sir.
Mr. PARKER. What is the remedy?
Maj. BURNS. A redesign of part of the plant which has to do with the purification of the gases and of the fixing of the gases to form ammonia.
Mr. PARKER. You know it would work if that were done?
Maj. BURNS. We think it would work; yes, sir.
Mr. PARKER. You would have to get the catalysts, would you not?
Maj. BURNS. Yes, sir.
Mr. PARKER. And buy those at large expense?
Maj. BURNS. That is very much of a secret; that is, the catalyst. We would have to make it ourselves. You appreciate, Mr. Parker, that the Government has had working since the armistice a research laboratory on the problem of fixing nitrogen and converting it into usable forms for munitions and components of fertilizers. They have done a great deal of very important work along those lines, and one of their accomplishments has been the development of a good catalyst.

Mr. PARKER. But you have not tried it on a commercial scale?

Maj. BURNS. No, sir; because we thought the necessity did not call for that, inasmuch as the Atmospheric Nitrogen Corporation had established a plant, for we felt that the objective of the Ordnance Department had been accomplished and that we should not spend any more money.

Mr. PARKER. You think in time of war you would merely assist them rather than use plant No. 1, except in an emergency?

Maj. BURNS. The Chief of Ordnance has recommended that the No. 1 plant be sold.

Mr. PARKER. What would it cost to change it?

Maj. BURNS. To reconstruct the No. 1 plant on a capacity equal to its present rated capacity would cost in the neighborhood of $4,000,000.

Mr. PARKER. What is its rated capacity; how much a day?

Maj. BURNS. Thirty tons of ammonia per day.

Mr. PARKER. That is three times the capacity of the Syracuse plant?

Maj. BURNS. Yes, sir.

Mr. PARKER. Do you recommend, however, that it be sold?

Maj. BURNS. Yes, sir.

Mr. PARKER. I ask these questions because I think your brief answers explain the matter much quicker than any scientific discussion. What does the other plant do? What is the process used there—that is, plant No. 2?

Maj. BURNS. The first raw materials used are limestone and coke. You burn limestone and form burnt lime, and then these two materials or burnt lime and coke are welded together to form calcium carbide, the material from which we get acetylene gas. The nitrogen is extracted from the air by the liquid-air process and it is combined with the calcium carbide to form the cyanamid or lime nitrogen.

Mr. PARKER. How is that made?

Maj. BURNS. The last welding?

Mr. PARKER. The welding of the nitrogen with the calcium carbide.

Maj. BURNS. That is done in a small oven.

Mr. PARKER. An electric oven?

Maj. BURNS. Heat is the cause of it. If you heat those materials a reaction sets in, and the combination is made.

Mr. PARKER. That makes the cyanamid?

Maj. BURNS. Yes, sir. If you treat the cyanamid with steam you produce ammonia. Then, if you pass ammonia and air through a platinum gauze at a high temperature, and absorb the gases in water, you change the ammonia into nitric acid. Then, if you put ammonia and nitric acid together, you will get ammonium nitrate.

Mr. PARKER. Is that under heat?

Maj. BURNS. One is an acid and the other is an alkali, and they will combine of themselves.

Mr. PARKER. If you want to make sulphate, you take the ammonia and the sulphuric acid and put them together, instead of using the nitric acid?

Maj. BURNS. Yes, sir.

Mr. PARKER. You do not make sulphate out of the nitric acid, but out of ammonia and sulphuric acid?

Maj. BURNS. That is correct; yes, sir.

Mr. PARKER. As the sulphuric acid is much cheaper than nitric acid, you can make the sulphate much cheaper than nitrate, can you not?

Maj. BURNS. Much cheaper; yes, sir. Sulphuric acid has no fertilizer value, however, whereas nitric acid has a great fertilizer value.

Mr. PARKER. The nitric acid is used a great deal?

Maj. BURNS. Yes, sir; that is the basis of the Chilean nitrate.

Mr. PARKER. But the Chilean nitrate is changed into sulphate before it is used in fertilizer?

Maj. BURNS. No, sir; it is used in fertilizer as such.

Mr. PARKER. What is the comparative cost of the nitrate which you get in this factory and the nitrate you get from Chile?

Maj. BURNS. As I stated before, we believe, with power at three-quarters of a mill, we can produce ammonium sulphate at No. 2 plant for approximately $60 a ton.

Mr. PARKER. I asked about the nitrate.

Maj. BURNS. The nitrate is selling at about $45 a ton, I believe; that is the Chilean nitrate.

Mr. PARKER. And the nitrate you make would cost you how much?

Maj. BURNS. Ammonium sulphate would cost $60 per ton.

Mr. PARKER. I am talking about the nitrate; that costs more than $60 a ton, does it not?

Maj. BURNS. Yes; ammonium nitrate, or the final product of the No. 2 plant, would cost in the neighborhood of $90 to $100 a ton, depending on the amount of your overhead.

Mr. PARKER. So, as a peace proposition it is cheaper to buy the nitrate from Chile than it is to make it at the factory?

Maj. BURNS. Not necessarily; because there are varying properties of nitrogen in the compounds of which you speak. The Chilean nitrate has approximately 16 per cent of nitrogen, the ammonium sulphate has approximately 21 per cent of nitrogen, and the ammonium nitrate has approximately 35 per cent of nitrogen. They are all rated in value really upon their nitrogen content.

Mr. PARKER. As a commercial proposition, if you made nitrates there, could you make them at the market price?

Maj. BURNS. You could not make ammonium sulphate to-day in competition with the market price, because I do not believe you could make it for less than $60 a ton, and the market price at the present time is $50 a ton.

Mr. PARKER. Can you make the ammonium nitrate at the market price of that product?

Maj. BURNS. Just about; yes, sir.

Mr. PARKER. Are there any processes which, instead of using air and water and limestone, make it out of coke refuse or gas refuse?

Maj. BURNS. One of the by-products thrown off when you make coke out of coal is ammonia, which is thrown out as a gas, and of course that ammonia in fertilizer is just as good as any other ammonia.

Mr. PARKER. That ammonia is being developed more and more from year to year in the by-products ovens?

Maj. BURNS. It is being produced in very large quantities from the by-product coke ovens.

Mr. PARKER. And the by-product coke ovens are making a greater saving every year?

Maj. BURNS. I can only answer that question by saying that the by-product coke-oven industry is expanding.

Mr. PARKER. There are a great many by-products from the by-product coke ovens, are there not?

Maj. BURNS. Yes, sir.

Mr. PARKER. All of which can be sold?

Maj. BURNS. Yes, sir.

Mr. PARKER. So that by-product coke ovens, if they make ammonia in large quantities, will dispose of that for what they can get for it?

Maj. BURNS. They will undoubtedly set the prices for their products so they can get the best combined return.

Mr. PARKER. But no matter what the price of ammonia in the market may be, as charged by the Syracuse company or anybody else, the by-product ovens would be able to lower the price of the ammonia which they are making out of their products?

Maj. BURNS. They would, if they could make their money out of their other products. But sometimes you can not sell coke at the price you would like to.

Mr. PARKER. The by-product coke ovens are making more and more ammonia every year, are they not?

Maj. BURNS. The by-product coke oven business is expanding. On the other hand, there is more or less of a limit as to how greatly it can expand, because their principal product is coke, and unless they can get a ready market for their coke they can not well afford to put in additional by-product ovens.

Mr. PARKER. What proportion of the coke ovens are by-product ovens?

Maj. BURNS. Approximately 55 to 60 per cent of all the ovens are by-product ovens, and the remainder are beehive ovens.

Mr. PARKER. Gas works use coke ovens practically altogether, do they not?

Maj. BURNS. Yes, sir; in the manufacture of coal gas, but not for water gas.

Mr. PARKER. And you have not included those in your estimate of 55 per cent, have you?

Maj. BURNS. No, sir. But they do not have any appreciable effect upon that percentage.

Mr. PARKER. Why not?

Maj. BURNS. That is, as far as the ammonia product is concerned.

Mr. PARKER. Because they do not save it? Is that what you mean?

Maj. BURNS. Their total production of ammonia, even though it were all saved, is not very great as compared with the production in by-product coke ovens.

Mr. PARKER. How much coke is made in coke ovens and how much in gas ovens?

Maj. BURNS. I am informed that gas plants produce about one-tenth as much ammonia as by-product ovens.

Mr. HILL. Major, do you know what Mr. Ford contemplates doing with plant No. 1?

Maj. BURNS. No, sir.

Mr. WURZBACH. Major, in taking issue with Col. Hull on the construction of the contract between the Alabama Power Co. and the Government, did you have in mind the legal obligation or the moral obligation, if any, on the part of the Government?

Maj. BURNS. I do not think I am qualified to argue the legal problems at all.

Mr. WURZBACH. So what you had in mind was a supposed moral obligation?

Maj. BURNS. Principally; yes, sir.

Mr. WURZBACH. Would you not be willing to admit that if the officers of the Government who undertook to make this contract were, in fact, not authorized to make it, but that the power rested with Congress, that you would not infer a moral obligation from an unauthorized act of an agent?

Maj. BURNS. There is another way of attacking the problem. Suppose you assume the contract is illegal, and you start condemnation proceedings to get full title to that land. You have got to pay a great deal of money to establish those rights.

Mr. WURZBACH. Is that what you meant?

Maj. BURNS. Personally, I believe the Alabama Power Co. contract should be lived up to. But in case it is not lived up to, you have that alternative, of beginning condemnation proceedings and paying whatever damages are awarded by the power that controls.

Mr. WURZBACH. That is based on a supposed moral obligation due to the fact that the officers of the Government attempted to make a contract?

Maj. BURNS. No, sir; exclusive of the moral obligation, you would still have these very large damages to pay if you tried to get the property rights which Mr. Ford requires in his agreement.

Mr. WURZBACH. What property is involved in the contract between the Alabama Power Co. and the Government that would have to be passed with a valid title under this contract, according to your construction?

Maj. BURNS. The land on which the Gorgas power plant is located, the land on which the transmission line is located, and the damages to the Gorgas plant that would be caused by our taking that land away from them and giving Mr. Ford a clear title to the plant site.

Mr. WURZBACH. What damages?

Maj. BURNS. As I said, that plant is all under one roof, and it is worked as a combined plant.

Mr. WURZBACH. Part of the property under that roof belonged to the Alabama Power Co. before the contract was made?

Maj. BURNS. Yes, sir; and part of it belongs to the United States.

Mr. WURZBACH. In which item, on page 24 of the Secretary of War's letter, is that particular proposition involved; that is, the Gorgas power plant?

Maj. BURNS. Under the heading "Warrior-Sheffield power station and transmission line," it was included, and comprises the first item under that heading, or the Warrior generating plant, at a cost of $3,417,702.70; then the Warrior substation, at a cost of $383,756.35; and also the Drifton Railroad, with a value of $50,421.94.

Mr. WURZBACH. Which particular part of that photographed property is involved in those items, the Warrior generating plant?

Maj. BURNS. Yes; and the Warrior substation.

Mr. WURZBACH. What was the approximate value of that plant before the Government expended money on it in enlarging it?

Maj. BURNS. I can not tell you that.

Mr. WURZBACH. Was it a substantial, going plant at that time?

Maj. BURNS. Yes, sir; it was a producing plant at that time, and undoubtedly had a value in excess of $3,000,000.

Mr. WURZBACH. Which other one of these items is the Government's property, so scrambled up with the Alabama Power Co. property that it is difficult to unscramble? I suppose that is the Warrior generating plant proposition?

Maj. BURNS. You include by that question the Warrior generating plant and substation, and the Drifton Railroad, those three? They are all part of the same project.

Mr. WURZBACH. But they are not under that same roof; they could be easily separated, could they not?

Maj. BURNS. The Drifton Railroad is not under the same roof. But the Drifton Railroad does not amount to much, anyway.

Mr. WURZBACH. The value of all that property is given here as $4,979,782.33.

Maj. BURNS. Yes, sir.

Mr. WURZBACH. Is that the cost to the Government?

Maj. BURNS. Yes, sir.

Mr. WURZBACH. That does not undertake to fix the present value of that property?

Maj. BURNS. No, sir.

Mr. WURZBACH. Is that the cost to the Government based upon a 10 per cent cost-plus basis?

Maj. BURNS. That is the entire cost to the Government, the money expended in the project.

Mr. WURZBACH. You say it is your judgment that this same property could be sold for $3,000,000, or about 60 per cent of its cost under the 10 per cent cost-plus contract?

Maj. BURNS. Yes, sir.

Mr. WURZBACH. Would that not be a higher value received by the Government than any amount the Government received for any property built during the war under a 10 per cent cost-plus contract?

Maj. BURNS. Not for any property, but it would be more than has been received for a great portion of its property.

Mr. WURZBACH. It generally has received about 10 to 15 per cent of the value?

Maj. BURNS. Approximately that. Of course, those plants had to be sold practically as scrap plants. When we were able to sell a plant as a going concern we got more money for it. I think in some instances where we had by-product coke-oven contracts more or less similar to this power plant contract we got a very substantial proportion of their cost value. I think in some instances it ran as high as 80 per cent.

Mr. WURZBACH. This proposition involved in Mr. Ford's proposal includes an additional expenditure of about $50,000,000, does it not?

Maj. BURNS. You are referring to the hydroelectric proposition?

Mr. WURZBACH. The whole proposition, the completion of Dam No. 2 and the building of Dam No. 3.

Maj. BURNS. As I understand the report, that is correct.

Mr. WURZBACH. The Government now has invested in and about Muscle Shoals about $105,000,000?

Maj. BURNS. Yes, sir.

Mr. WURZBACH. That would make a total there of about $150,000,000 involved in this proposition?

Maj. BURNS. That is correct.

Mr. WURZBACH. If the Government could salvage or receive from the Alabama Power Co. $3,000,000 for the Warrior generating power station and the transmission line, which is your estimate, then that part of the proposition represents about 2 per cent of the entire proposition in money, does it not?

Maj. BURNS. Yes, sir; that is correct.

Mr. WURZBACH. Would you be willing to turn down a proposition that would otherwise be profitable to the Government on account of the possible loss of $2,000,000?

Maj. BURNS. Not so much because of the possible loss, but I would turn it down when it causes the Government to break a contract.

Mr. WURZBACH. Coming back to the moral obligation?

Maj. BURNS. Yes, sir.

Mr. WURZBACH. Do you not recognize, Major, that your conclusion would lead you to a violation of every law, every constitutional provision, if you permit an agent to first perform an act which he had no authority to perform and then follow that by saying that because he was the agent of the Government the Government ought to carry out that obligation as a moral duty, and do you not recognize that that would be subversive of all law?

Maj. BURNS. Of course, I think there may be considerable doubt as to whether the officer did really violate the law or exceed his authority?

Mr. WURZBACH. Now you are coming back to the legal obligation.
Maj. BURNS. I am saying there might be a doubt.
Mr. WURZBACH. You are not a lawyer?
Maj. BURNS. No, sir.
Mr. WURZBACH. The law branch of the War Department has held, as was stated before the committee by the Acting Judge Advocate General on Friday last, that the contract is invalid. You heard that statement?
Maj. BURNS. Yes, sir; I heard them say that.
Mr. FIELDS. Major, by whom was plant No. 2 constructed?
Maj. BURNS. The prime contractor was the Air Nitrates Corporation, which is a subsidiary of the American Cyanamid Co.
Mr. FIELDS. What were the terms of the contract under which that plant was constructed—was it a cost-plus contract?
Maj. BURNS. Yes, sir; it was, cost plus a limited fee.
Mr. FIELDS. What was the total cost of the construction of that plant?
Maj. BURNS. In round numbers, $70,000,000.
Mr. FIELDS. What was the total amount received by this company for the construction of the plant?
Maj. BURNS. This company constructed not only plant No. 2, but also nitrate plants Nos. 3 and 4, which, after the war, were declared surplus. Their total earned fee, as I read the contract, was $1,500,000. They have received of that amount, approximately, $1,150,000.
Mr. FIELDS. My question was, What was their total fee for the construction of nitrate plant No. 2?
Maj. BURNS. As I said, as I read the contract they earned a fee of $1,500,000, but they have only——
Mr. FIELDS (interposing). That is for plant No. 2?
Maj. BURNS. Yes, sir; on plant No. 2. They would have received the maximum fee when the expenditures reached $60,000,000, and no matter how much work they had to do after that on all three plants, they would have earned no more fee.
Mr. FIELDS. Their total earned fee on this proposition was what?
Maj. BURNS. In my judgment it was $1,500,000. I wish to point out, however, that they have not been paid all of that fee; they have been paid only $1,150,000.
Mr. FIELDS. And the Gorgas steam plant and these other matters we have been discussing in connection with the Alabama Power Co. contract were constructed by the Alabama Power Co.?
Maj. BURNS. Yes, sir.
Mr. FIELDS. What was their total fee?
Maj. BURNS. Their total fee was $225,000.
Mr. FIELDS. That covered all they received?
Maj. BURNS. That covered all of their fee. Then they received $60,000 for overhead expenses, but that was supposed to be a direct cost, although it was lumped in order to avoid cost accounting.
Mr. FIELDS. Does this contract between the Government and the Alabama Power Co. for the purchase of this property by the Alabama Power Co. at a price to be determined by a board of arbitrators compel the Alabama Power Co. to accept the price fixed by the board?
Maj. BURNS. I think it does. Here is a clause of that sale article, "At any time subsequent to three years after the termination of the war the United States shall have the option to sell to the contractor and the contractor shall, upon the written demand of the United States, buy all its rights, title, and interest in and to the Warrior extension and the Warrior substation, with all rights pertaining thereto, at the value fixed by the board of arbitrators, as hereinafter provided." That would seem to me to definitely require the Alabama Power Co. to purchase provided the Government wishes them to do so.
Mr. FIELDS. It might be a question, it seems to me. Now, as to the value of the property you refer to as a going concern—that is, the Gorgas steam plant—do you regard the estimated salvage value fixed by the Ordnance Department as a fair value for that property as a going concern?
Maj. BURNS. Yes, sir; I do.
Mr. FIELDS. With regard to the production of the fertilizer product contemplated at nitrate plant No. 2, what by-products would be produced along with the production of fertilizer?
Maj. BURNS. None, to my knowledge.
Mr. FIELDS. None at all?
Maj. BURNS. No, sir.

Mr. FIELDS. Referring to your statement with regard to the cost of the production of this product, you recognize the fact, of course, that labor and its efficiency is always a great item in the production of any commodity?
Maj. BURNS. Yes, sir; that is correct.
Mr. FIELDS. Were you basing your figures upon the cost of production by the Government or by private industry when you referred to the cost of it a few moments ago?
Maj. BURNS. I do not know that we differentiated very much in that. We set out against our work what we figured was the proper labor item. We assumed labor would be utilized efficiently. That was the basis of our assumption.
Mr. FIELDS. It seems to me Mr. Ford has always shown great ability to perfect a very thorough labor organization. Do you believe it possible he could perfect an organization there that would produce this product more cheaply than the Government could produce it?
Maj. BURNS. I think, without doubt, Mr. Ford could utilize labor more efficiently than the Government-controlled plant could utilize labor.
Mr. FIELDS. In view of your statement that it would be impossible to unscramble this proposition between the Government and the Alabama Power Co., you think there is only one of two courses open to the Government: The Government must institute condemnation proceedings and take over this property, or sell it to the Alabama Power Co.?
Maj. BURNS. Yes, sir; that is what I think.
Mr. FIELDS. Following a little further what Mr. Wurzbach has said with regard to your contention that the contract should be morally binding, if not legally binding upon the Government, because some agent of the Government happened to enter into it, just how far would a proposition of that kind, if followed to its last analysis, carry us?
Maj. BURNS. I do not think the contract should be lived up to if any taint of any kind could be proved against the parties that entered into the contract.
Mr. FIELDS. Granting that it was legitimate and that the parties who made it on the part of the Government did it with the best intentions, would it not, in the end, bind the executive departments and the Congress as well to a repudiation of the constitutional provisions which place that authority in the Congress?
Maj. BURNS. It seems that it might; yes, sir.
Mr. FIELDS. If the Congress did not maintain the safeguards, as provided in the law and the Constitution, around Government contracts and Government expenditures, there might be no limit to the abuses that would be indulged in by agents of the Government, probably not through ulterior motives but by lack of judgment, by which the Government would be bound if it accepts the contention of the Ordnance Department in this case.
Maj. BURNS. I should say that might be true; yes, sir.
Mr. FIELDS. So the Ordnance Department, in order to protect a contract made by one of its agents, urges the Government to embark upon a rather dangerous policy?
Maj. BURNS. I think, Mr. Fields, we are getting into a complicated legal discussion which I am hardly qualified to indulge in.
Mr. FIELDS. Let us refer to the legal side of it a little further. Whether you have knowledge of the subject or not, is it not fair to assume that the Alabama Power Co., in entering into this contract with the Government, was represented by able counsel?
Maj. BURNS. Yes; I think they were.
Mr. FIELDS. Do you believe that the counsel of the Alabama Power Co. did not know that they were drawing a contract for the agent of the United States Government to sign that was not authorized by law or by the Constitution of the United States?
Maj. BURNS. It is my judgment that they did not draw a contract that they thought was illegal. I do not think that either they or the representatives of the Ordnance Department drew a contract that they thought was illegal.
Mr. FIELDS. Was the gentleman who drew this contract for the War Department a lawyer of noted ability?
Maj. BURNS. I do not know how noted he was, but he was a lawyer.
Mr. FIELDS. Is it fair to assume that great corporations like the Alabama Power Co. would enter into a contract with the Government or anybody else without being represented by able counsel?
Maj. BURNS. I think unquestionably they were represented by able counsel.

Mr. FIELDS. Do you think it is possible that their able counsel did not know that this contract was not authorized by law and by the Constitution; that the power to dispose of property of this character is vested in Congress?

Maj. BURNS. I think it is very probable that they did not know it was against the law. This work was done practically during the fall of 1917 and the spring of 1918, when the war fever was at its height, and when every effort was being made to put the United States in such a condition that it could win the war as quickly as possible, and anybody who hesitated to enter into a contract that would help along that purpose was rated as a slacker.

Mr .FIELDS. I agree with you on that, and am therefore always ready to make reasonable allowance for an agent acting on the part of the Government who might have exceeded his authority. But the object of the attorney for the company entering into this contract was to properly protect his company, and he would evidently look up the law to see if the contract which he was entering into for his company was being drawn in accordance with the law, so it would be a legal contract. He would be a very poor attorney if he did not do that.

Maj. BURNS. That is correct. This matter has been passed upon by the Judge Advocate General's Department. I have every confidence in the world in that department, but I have had enough experience with the law to know that sometimes one judge will say yes to a question and another judge will say no to the same question. So I do not believe it has been proven that this is an illegal contract.

Mr. FIELDS. I notice that the Acting Judge Advocate General read a decision of the Supreme Court of the United States on Friday in support of his opinion in reference to this proposition.

Maj. BURNS. That is correct.

Mr. FIELDS. That is the highest authority in the United States on legal matters.

Mr. QUIN. Major, you are a graduate of West Point?

Maj. BURNS. Yes, sir.

Mr. QUIN. What age are you? I am not asking this in a personal way, but just to get the information in the record.

Maj. BURNS. I am 36.

Mr. QUIN. You are a practitioner of the law, I presume?

Maj. BURNS. No, sir; I am not.

Mr. QUIN. How is it you give such a full opinion on such a very delicate and intricate constitutional legal question?

Maj. BURNS. I do not think I have given any opinion of a legal nature on a legal question. I did not intend to do so.

Mr. QUIN. Did you not say that the United States Government did not have anything but a legal contract with this company, and that the Government could not enter into an agreement with Mr. Ford in connection with this particular property on which the Alabama Power Co. is interested?

Maj. BURNS. I do not know that I answered a question that was framed like that; I did not answer it like that.

Mr. QUIN. Tell us what you did say touching the legality of this contract between the Alabama Power Co. and the United States Government, entered into by a representative of the Ordnance Department?

Maj. BURNS. I did not know that I touched upon the legality of it. I think you have a situation down there that is very complicated and that you should solve it in accordance with the contract that has been drawn up, which requires that the property be sold to the Alabama Power Co. If you do not do that, you will have to condemn the land and pay damages, in accordance with the decision of the judge advocate.

Mr. QUIN. You do not mean to say the Government can not condemn the land and acquire the title?

Maj. BURNS. I do not believe I have said that.

Mr. QUIN. You did not mean in your answer to say that under this alleged contract the Government of the Un ted States could not go ahead and condemn that property?

Maj. BURNS. The judge advocate says it can.

Mr. QUIN. Then there is no legal reason, according to your idea, why the Government can not proceed?

Maj. BURNS. Assuming that it is an illegal contract—I am now getting into the illegality of it again—I believe the United States could condemn.

Mr. QUIN. You did get into it when you answered the question very emphatically, and if you are not for it I want the record to show your exact idea.

Maj. BURNS. I am very glad to give you the facts as I see them.

Mr. QUIN. I want to know just what you meant.

Maj. BURNS I feel this way about it, that we have a contract with the Alabama Power Co. that I think should be lived up to.

Mr. QUIN. Do you put that opinion upon legal, constitutional grounds?

Maj. BURNS. Principally on the ground that we ought to live up to a contract that was entered into in all good faith by the parties to the contract.

Mr. QUIN. Then if a contract is made that is supposed to be a contract, and made under the circumstances you relate—that is, in violation of the Constitution of the United States, and the party making the contract on the part of the Government did not have any authority under the Constitution, nor through any legislative act of Congress to enter into the contract, and the Alabama Power Co. had people representing them who, constructively at least, knew that to be true, you believe the people of the United States ought to be deprived of this offer on that ground, that we should carry out such an alleged contract as that?

Maj. BURNS. I think the contract ought to be lived up to, even though it forces us to the rejection of the Ford offer.

Mr. QUIN. Then you would be willing to see a contract made by Mr. Williams, who some witness testified was from the National City Bank of New York, the Wall Street banking interests, the Rockefeller, Stillman crowd, at a time when we were conscripting our boys and sending them to die in the trenches—you would be willing to see a contract made with the Alabama Power Co. with nothing but a lot of land and blue-prints for buildings which they were going to construct themselves, and you think this Government under those circumstances should allow these people, after giving them $285,000 clean profit, without their investing a dollar for construction, investing nothing but their knowledge, to thwart the best interests of the American people by preventing the Government from making a contract with Mr. Ford for the development of this enterprise?

Maj. BURNS. I believe if Mr. Ford is going to insist upon that provision in the contract that the Ford offer ought to be rejected.

Mr. QUIN. In other words, you believe that if an armed hold-up man should force me to sign a check that I ought not to direct the bank not to pay out cash for the check?

Maj. BURNS. You are asking me hypothetical questions. I have tried to make myself plain to the effect that I believe the Government ought to carry out that contract.

Mr. QUIN. On what grounds do you base that opinion?

Maj. BURNS. Because I believe that contract should be lived up to.

Mr. QUIN. Then you do not think that the interests of the American people come ahead of a contract drawn, wherein the party who signed it knew the law and the Constitution of the United States, and must have known that the American people were being deprived of their ultimate rights?

Maj. BURNS. I can see no necessity for the inclusion in the Ford offer of the requirement to give title to the Gorgas plant.

Mr. QUIN. Outside of your viewpoint, Mr. Ford views it otherwise, and he is the man who is putting up the money in this instance. If other people connected with it think it is necessary—I do not know myself, but they seem to think it is necessary—do you not think the Government ought to go ahead?

Maj. BURNS. No, sir; I do not. I think they ought to live up to the Alamaba Power Co. contract.

Mr. QUIN. Is that for moral reasons? You do not give any legal reasons for it. You are unaware of any, you say.

Maj. BURNS. I suppose it is a question of judgment, and my conviction is that they should live up to it.

Mr. QUIN. That is your judgment of the question, and not your opinion as a constitutional lawyer. You have not investigated any of the decisions of the Supreme Court of the United States touching this question?

Maj. BURNS. Not in any way, shape, or manner.

Mr. QUIN. When the Acting Judge Advocate General of the War Department says this is an invalid contract, and that the Government, so far as the law is concerned, would have no trouble in proceeding to acquire this property and turn it over to Mr. Ford, you do not dispute that, do you?

Maj. BURNS. I can only repeat my statement, and that is that it is my feeling that the Government should live up to this contract.

Mr. QUIN. What percentage of dirt and sand is there in the Chilean nitrates?

Maj. BURNS. You mean those received in the United States?

Mr. QUIN. Yes; the nitrates we get from Chile.

Maj. BURNS. Those nitrates are practically 95 per cent pure sodium nitrate.

Mr. QUIN. That comes through the chemical work?

Maj. BURNS. No, sir. In the plains of Chile there are deposits of sodium nitrate, but the sodium nitrate is only a part of the soil that is dug up. I think the deposits now are about 20 per cent sodium nitrate. That goes to the refineries and the extraneous matter is removed by chemical processes, and the whole thing is concentrated until it is about 95 per cent pure.

Mr. QUIN. What percentage of nitrogen is in the ordinary commercial fertilizer that is used, and what percentage of ammonia?

Maj. BURNS. There are all kinds of fertilizer materials.

Mr. QUIN. You are acquainted with what they call raw bone phosphate, are you not?

Maj. BURNS. No, sir.

Mr. QUIN. Are you acquainted with the acid phosphates?

Maj. BURNS. Generally.

Mr. QUIN. Take the general average.

Maj. BURNS. Ordinarily, a complete fertilizer material has about 2 or 3 per cent of ammonia, about 8 per cent of phosphoric acid, and 2 or 3 per cent of potash. They have a great many different formulæ.

Mr. QUIN. Do they not have nitrogen in them, too?

Maj. BURNS. That is contained in the ammonia.

Mr. QUIN. I wish you would give us the total percentage, so that the record will show the total percentage of phosphate; that is about 16 per cent, is it not?

Maj. BURNS. It would be somewhere between 13 and 15 per cent.

Mr. QUIN. About 14 per cent, on the average?

Maj. BURNS. That is practically correct.

Mr. QUIN. The rest of it is what?

Maj. BURNS. It is filler of one kind or another.

Mr. QUIN. It is dirt and sand, is it not?

Maj. BURNS. There is some dirt, but most of it is necessary.

Mr. QUIN. Because if you throw down a handful of it and let rain come on it, the chemical part is washed away and the dirt and sand are left there. That is my experience in spreading it over the ground. This plant turning out 110,000 tons of nitrogen a year would make one-half of the total amount of fertilizer consumed in the United States, would it not?

Maj. BURNS. It would make one-half of the inorganic nitrogen content of the fertilizer used in the United States at the present time.

Mr. QUIN. That is what I meant. It would make one-half of the nitrogen content for the maximum consumption of any one year, and that is close to 8,000,000 tons. That is what that plant would turn out, running at a capacity of 110,000 tons a year?

Maj. BURNS. That is substantially correct; yes.

Mr. QUIN. You remember some questions Mr. Miller asked you about this fertilizer business? In the manufacture of fertilizer for the farmers there is about 86 per cent of dirt and sand and about 14 per cent, approximately, of real fertilizer content. Is that not correct?

Maj. BURNS. It is not all dirt. They can not escape putting a certain amount of filler.

Mr. QUIN. I understand that. If it was all nitrogen, you could not afford to buy it.

Maj. BURNS. Take, for instance, the ammonium sulphate. The nitrogen content is only 20 per cent. You can not separate the 20 per cent from the carrier, because you have to have 80 per cent of the carrier to get the ammonium sulphate; you have to have the carrier in acid phosphate and in potash salts, so it would be absolutely impossible to eliminate more than a small part of all the carrier or filler.

Mr. QUIN. What is the carrier composed of?

Maj. BURNS. In the case of ammonium sulphate the big bulk of the carrier is really sulphuric acid, which you have to have to form the ammonium sulphate.

Mr. QUIN. Is not the fertilizer compound made into this concentrated form?

Maj. BURNS. It is, but in ammonium sulphate you can not concentrate the nitrogen any more, because the chemical equation will not allow you to do so. Whenever you furnish ammonium sulphate it is 20 per cent nitrogen and 80 per cent filler or carrier.

Mr. QUIN. Why can not the farmer dig up the dirt and sand and mix them with 1 per cent fertilizer and 4 per cent dirt?

Maj. BURNS. It can not be done because, as I am telling you, in the chemical equation you have to have a lot of this carrier to hold this nitrogen which is used in the fertilizer.

Mr. QUIN. You mean you could not get it there without having all of that?

Maj. BURNS. You could not eliminate more than a small part of it.

Mr. QUIN. What is the distance from plant No. 2, where the power plant, or this water power is going to be, from the Gorgas plant?

Maj. BURNS. The No. 2 plant is about 2 miles from the big hydroelectric dam, and they are both approximately 90 miles from Gorgas.

Mr. QUIN. And this territory over which the transmission line runs to supply the extra power which you state was contemplated there is land that belongs to the Alabama Power Co.?

Maj. BURNS. Yes, sir.

Mr. QUIN. And the Gorgas plant itself is on land that belongs to the Alabama Power Co.?

Maj. BURNS. That is on land that belongs to the Alabama Power Co.

Mr. QUIN. How many acres of land is there?

Maj. BURNS. I think it amounts to about 15 or 20 acres at the Gorgas powerplant site.

Mr. QUIN. What have they at that site?

Maj. BURNS. They have a power plant capable of producing about 20,000 kilowatts by the steam process, and they have a substation for turning that power into their line, and they have a connecting line which ties the substation into their main distribution system.

Mr. QUIN. And that was tied into this alleged contract with the Government?

Maj. BURNS. Yes, sir.

Mr. QUIN. How far is Dam No. 3 above this?

Maj. BURNS. As I heard the testimony, it is the neighborhood of 16 or 17 miles above No. 2 Dam.

Mr. QUIN. In what direction does that stream flow?

Maj. BURNS. In that region it flows a little south of west.

Mr. QUIN. Into what does it empty?

Maj. BURNS. It empties into the Ohio River, as I understand it.

Mr. QUIN. It has its source in the Carolinas or in West Virginia, does it not?

Maj. BURNS. Gen. Beach stated that it has its source in Virginia.

Mr. QUIN. At what point does it enter into the Ohio River?

Maj. BURNS. I do not remember that.

Mr. QUIN. It enters the Ohio River near Paducah, Ky., I think.

Mr. WRIGHT. What business is the American Cyanamid Co. engaged in?

Maj. BURNS. It is engaged in manufacturing materials for the fertilizer trade, principally the nitrogen and phosphoric-acid compounds.

Mr. WRIGHT. Where is its plant located?

Maj. BURNS. It has a plant near Niagara Falls in Canada, at which it makes cyanamid by the same process we use at the No. 2 plant.

Mr. WRIGHT. It makes the same product?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. Has that company any other plant?

Maj. BURNS. Yes, it has a plant at Warner, N. J., where it makes a material called amophos, a combination of phosphoric acid and ammonia.

Mr. WRIGHT. Do you know what the capacity of this Canadian plant of the American Cyanamid Co. is?

Maj. BURNS. It is about one-fourth the capacity of the plant at Muscle Shoals.

Mr. WRIGHT. Do you know where it finds a market for that product?

Maj. BURNS. Generally, I understand, they sell their cyanamid or their amophos to the fertilizer trade as one of the ingredients of a complete fertilizer.

Mr. WRIGHT. Where is the Air Nitrates Corporation located?

Maj. BURNS. It had an office at 511 Fifth Avenue, New York.

Mr. WRIGHT. Is it still in existence?

Maj. BURNS. Yes, I think it is.

Mr. WRIGHT. What business does it do?

Maj. BURNS. It was formed solely for the purpose of executing this contract with the Government for the construction and operation of United States Nitrate Plants Nos. 2, 3, and 4.

Mr. WRIGHT. Do you know what the capital of that corporation is?

Maj. BURNS. I understand the capitalization was $1,000.

Mr. WRIGHT. How much has it already received from the Government for constructing these plants at Muscle Shoals?

Maj. BURNS. It received a cost-plus fee, and a fee has been paid to the amount or $1,150,000.

Mr. WRIGHT. They are claiming considerably more?

Maj. BURNS. They are claiming $1,500,000.

Mr. WRIGHT. The Air Nitrates Corporation is subsidiary of the American Cyanamid Co.; is it not?

Maj. BURNS. That is correct; yes, sir. It was formed, as I understand it, for the purpose of protecting the company from possible difficulties that might ensue as a result of the Government contract.

Mr. WRIGHT. It was really the American Cyanamid Co. which was acting, except that it would be relieved of legal liability.

Maj. BURNS. That is my understanding.

Mr. WRIGHT. The American Cyanamid Co. would undoubtedly receive the profits?

Maj. BURNS. Yes; without doubt. Of course, the American Cyanamid Co. turned over for the construction and operation of this plant all of their talent.

Mr. WRIGHT. The principal consideration there was to secure the services of somebody who knew how?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. Where is the Alabama Power Co. located?

Maj. BURNS. I understand their headquarters are at Birmingham, Ala.

Mr. WRIGHT. Do you know where they were chartered?

Maj. BURNS. No, sir; I do not know that.

Mr. WRIGHT. Is it not a Canadian company, so far as its capitalization is concerned, and was it not chartered in Canada?

Maj. BURNS. I believe it was, but I am not qualified to answer that.

Mr. WRIGHT. Your opinion is that it was chartered in Canada?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. And Canadian or English capital was furnished?

Maj. BURNS. That is my general information.

Mr. WRIGHT. Is it not true, Major, that the Alabama Power Co. is but a branch of the American Cyanamid Co.?

Maj. BURNS. I have never heard any intimation to that effect before this time.

Mr. WRIGHT. Either that, or that the American Cyanamid Co. is an ally of the Alabama Power Co.?

Maj. BURNS. I have never heard any intimation of that before.

Mr. WRIGHT. Do you not understand that these three companies are all of the same origin and are intertwined?

Maj. BURNS. No, sir; I do not.

Mr. WRIGHT. In what business is the Alabama Power Co. engaged?

Maj. BURNS. In the manufacture and sale of power in the general region surrounding Birmingham, Ala.

Mr. WRIGHT. Incidentally, these contracts, or the one entered into by the Alabama Power Co., had a clause which gave it an option to buy the Warrior Steam Plant?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. That was a part and parcel of the construction contract?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. That company received from $225,000 to $285,000 for its services?

Mr. BURNS. It received a fee of $225,000 on that contract.

Mr. WRIGHT. They executed the construction of this steam power plant at Gorgas?

Maj. BURNS. Yes, sir; that is correct.

Mr. WRIGHT. That was an emergency, so far as the Government was concerned, and was so considered?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. The prime object was to produce nitrates in Alabama for the War Department?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. And it was contemplated that the power from Dam No. 2 would be sufficient to run that nitrate plant No. 2, when developed, or to operate nitrate plant No. 2?

Maj. BURNS. I can not describe or explain what was in the back of the minds of the people who started the Wilson Dam.

Mr. WRIGHT. Is it not true that the nitrate project was started by the Government principally because they thought they could get cheap water power there?

Maj. BURNS. My understanding is that the No. 2 plant was started there because Muscle Shoals was the best-known site, and the raw materials were available.

Mr. WRIGHT. And the element of power was one of the material things?

Maj. BURNS. Hydroelectric power could not have been considered very seriously, because they must have known it would have taken much longer to produce power from a dam in the river than to produce power from a steam plant.

Mr. WRIGHT. Can you tell us why they started Dam No. 2 if it was not intended to use it in that way? It was the only activity the Government had down there.

Maj. BURNS. I can not explain that.

Mr. WRIGHT. That was the prime object, was it not?

Maj. BURNS. If you want to know the way I look at it now, it seems to me it was started to fit in with the No. 2 nitrate plant, but I do not know the intention of the people who started the project.

Mr. WRIGHT. This contract for the Warrior plant was entered into to get power quickly for nitrate plant No. 2, was it not?

Maj. BURNS. That is correct.

Mr. WRIGHT. It was contemplated that when that steam plant near the nitrate plant was completed the Government would have no further use for the Warrior plant, was it not? In other words, the steam plant near nitrate plant No. 2 was adequate to furnish power?

Maj. BURNS. No, sir; not quite. When that plant was originally designed it was expected that 90,000 kilowatts would be required to run it, and they got that by getting 30,000 from the Alabama Power Co. and 60,000 from the Government's steam plant at Muscle Shoals. In that contract the Alabama Power Co. had to furnish power during the war; they could not buy back that plant during the war.

Mr. WRIGHT. It was contemplated that the steam plant near nitrate plant No. 2 would supplant the power plant at Warrior, was it not?

Maj. BURNS. No, sir. When the project was designed it was thought that 90,000 kilowatts would be necessary, and therefore we had to make a contract for the 30,000 kilowatts from the Alabama Power Co., as well as to use the capacity of the steam plant at No. 2. The operation of the plant leads us to believe that the No. 2 plant can be operated nearly to its complete capacity with only the steam plant at Muscle Shoals.

Mr. WRIGHT. Near nitrate plant No. 2?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. That was the object of constructing that power plant—to furnish power?

Maj. BURNS. Not complete power.

Mr. WRIGHT. Not complete power, but to furnish power?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. And the option contained in that contract with the Alabama Power Co. provides that the Alabama Power Co. can become the purchaser of the Warrior steam plant?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. In other words, it is purely an option. In reference to the language you read a while ago, to the effect that the Government agrees to sell this plant to the Alabama Power Co., and the Alabama Power Co. agrees to buy it from the Government, those are mutual terms to make an option binding?

Maj. BURNS. What I read was only a part of the sales clause.

Mr. WRIGHT. Whoever drew the contract wanted to avoid a one-sided contract. There must be a mutuality. The Government agreed to sell it, and the Alabama Power Co. agreed to buy it, so at last it simply was an option.

Maj. BURNS. I do not understand it that way. I read you only a part of the sales clause.

Mr. WRIGHT. That is the option feature of it.

Maj. BURNS. That is one option feature.

Mr. WRIGHT. You understand that an option is a privilege by which one party agrees to do or not to do a certain thing. Do you undertake to say that if the Government would offer this plant to the Alabama Power Co. that the Alabama Power Co. would be bound to appoint an arbitrator as a member of the board to fix the value of the plant, and that the Alabama Power Co. would be bound to accept the award, or could they not just say we want to accept it?

Maj. BURNS. There is a very long clause pertaining to the method of selling that plant, and what I read to-day was only a small extract from the sales clause.

Mr. WRIGHT. In the light of all that has transpired—and I am not criticizing what was done during the emergency—can you not now see that it was the purpose of the Air Nitrates Corporation, which had an option in its contract to buy nitrate plant No. 2, and in the contract of the Alabama Power Co., which contained an option for it to buy the steam plant at Warrior, that it was simply a long-sighted, shrewd, ingenious idea to tie up the Government so that it could not dispose of these properties except these companies were the purchasers; in other words, it gave them the key to the situation?

Maj. BURNS. I can not subscribe to that.

Mr. WRIGHT. Does it not do that by the very terms of the contract?

Maj. BURNS. No, sir; I think not.

Mr. WRIGHT. You have just said the Government could not accept this contract with Mr. Ford because of the contract it has with the Alabama Power Co.

Maj. BURNS. But I also said the Warrior plant was not a vital part of the Muscle Shoals project.

Mr. WRIGHT. The fact is, it is included in the proposition.

Maj. BURNS. Yes, sir.

Mr. WRIGHT. You recited that as a reason why the Ford proposition can not be accepted?

Maj. BURNS. Yes, sir.

Mr. WRIGHT. Because of that clause in the contract with the Alabama Power Co.?

Maj. BURNS. That would be only——

Mr. WRIGHT (interposing). Do you not now see it was the purpose of the Alabama Power Co. in inserting this option clause to so tie up the Government that it could not dispose of this property except to it?

Maj. BURNS. It was undoubtedly the intention to tie up the Gorgas plant; but by that they did not, as I see it, put any restrictions upon the sale of nitrate plant No. 2.

Mr. WRIGHT. I am talking about the power plant. Do you not further realize that the Alabama Power Co. has practically a monopoly of the hydroelectric power in that region, and can you not see that they do not want a competitor to come into that field? Can you not see that they put this clause in to keep down competition and to prevent further developments being made down there?

Maj. BURNS. In all fairness to the Alabama Power Co.——

Mr. WRIGHT (interposing). I am talking about what you now see.

Maj. BURNS. I can not make an answer to that question by simply saying yes.

Mr. WRIGHT. Do you not further see that the American Cyanimid Co. is in the market manufacturing the identical product that nitrate plant No. 2 was designed to manufacture?

Maj. BURNS. That is correct.

Mr. WRIGHT. Can you not see that it is proposed in this construction contract whereby they agree to build nitrate plant No. 2 to also insert a clause which would tie up the hands of the Government so that the Government can not get into competition with the American Cyanamid Co., and can not sell this land to anybody who would come in competition with them?

Maj. BURNS. I should say that would be reasonable, businesslike protection.

Mr. WRIGHT. So far as the American Cyanamid Co. was concerned.

Maj. BURNS. Yes, sir.

Mr. WRIGHT. What do you think about the Government?

Maj. BURNS. It does not seem to me that the Government has the right——

Mr. WRIGHT (interposing). You are a business man of very wide experience?

Maj. BURNS. I am not a business man, and I doubt if I am a man of very wide experience.

Mr. WRIGHT. You would not say that a man of very wide business experience would enter into a contract like that for the Government?

Maj. BURNS. I think that contract is all right from the standpoint of the Government.

Mr. WRIGHT. Can you see anything in it for the Government except to get nitrate purely as an emergency feature, and the other feature was not looked out for at all?

Maj. BURNS. No, sir; I would not go as far as that.

Mr. WRIGHT. If it develops that the Alabama Power Co., the American Cyanamid Co., and the Air Nitrates Corporation are practically one, that the stockholders are practically the same, that the companies are simply organized under different names, then you can readily see why these contracts were entered into, can you not? I am asking you if that be true——

Maj. BURNS (interposing). I do not believe I could answer that question, because I think the hypothesis is wrong.

Mr. WRIGHT. The maintenance and operation of the steam plant is not at all essential to the conduct of these plants down there at Muscle Shoals; is that not true?

Maj. BURNS. In my judgment, it is not.

Mr. WRIGHT. There is adequate power now from the steam plant constructed by the Government in all these plants, and what may be received from dam No. 1 and dam No. 2, to supply these plants?

Maj. BURNS. Yes; there is almost enough power available at the steam plant No. 2 alone.

Mr. WRIGHT. And with the construction of dam No. 2 you can abandon the power connected with the steam plant?

Maj. BURNS. Absolutely.

Mr. WRIGHT. You do not regard the Gorgas power plant as at all essential to the successful operation of these plants at Muscle Shoals?

Maj. BURNS. I do not; no, sir.

Mr. WRIGHT. You think you can salvage that for $3,000,000?

Maj. BURNS. I do; yes, sir.

Mr. STOLL. Where does plant No. 1 get its power?

Maj. BURNS. There was a small power plant erected with a capacity of 5,000 kilowatts.

Mr. STOLL. Where does plant No. 2 get its power?

Maj. BURNS. Its principle source of power——

Mr. WRIGHT. If the gentleman will pardon me, I have one other question I omitted to ask the Major.

Mr. STOLL. Certainly.

Mr. WRIGHT. Major, you said the Alabama Power Co. was intended to furnish hydroelectric power.

Maj. BURNS. They furnish both hydroelectric and steam power.

Mr. WRIGHT. Then it is a power proposition, pure and simple.

Maj. BURNS. According to my understanding, it is.

Mr. WRIGHT. If the Air Nitrates Corporation is given the right to buy this nitrate plant No. 2 according to the terms of the contract with the Government, then the Government would have no use for dam No. 2, known as the Wilson dam, because it would have no way to use the power.

Maj. BURNS. Of course, power can be used for a great diversity of things.

Mr. WRIGHT. But you do not know of any market unless it was used for the operation of the nitrate plant.

Maj. BURNS. I do not personally know of any; no, sir. But I have heard the testimony of Mr. Cooper, and he claims that the general country down there can easily utilize the power that would be developed at Muscle Shoals.

Mr. WRIGHT. The idea is that the nitrate plant No. 2 and Dam No. 2 are supposed to be built in conjunction, so far as the Government proposition is concerned, and one depends on the other. So that if the Government disposes of nitrates plant No. 2 to the Air Nitrates Corporation, would there be any market for the power produced at Dam No. 2, except the Alabama Power Co.?

Maj. BURNS. As I said before, the testimony of Mr. Cooper indicated there would be abundant use for power over and above the market at the No. 2 nitrate plant.

Mr. STOLL. Plant No. 2 has its own steam plant to produce its power?

Maj. BURNS. It is expected that that will be almost enough to run the entire plant.

Mr. STOLL. Who owns the right of way between the Gorgas Plant and Muscle Shoals?

Maj. BURNS. The Alabama Power Co.; I do not know whether they have a complete title, but they either own it or they have control of the land.

Mr. STOLL. They own no other land at Muscle Shoals?

Maj. BURNS. Not to my knowledge.

Mr. STOLL. Where is the principal place of business of the Alabama Power Co.—I do not mean its office?

Maj. BURNS. I can only give you my general information. I believe most of their hydroelectric power is generated at what is known as Lock No. 12 on the Coosa River. They have steam plants scattered around to back up the hydroelectric power, and one of those is their plant at Gorgas.

Mr. STOLL. How much money has the Alabama Power Co. put into the Gorgas steam plant?

Maj. BURNS. My judgment is that it is well in excess of $3,000,000.

Mr. STOLL. You stated, I believe, that the Alabama Power Co. built a part of the plant and that the Government built the other part of the plant?

Maj. BURNS. Yes, sir.

Mr. STOLL. The Alabama Power Co. has no money in the part that the Government built?

Maj. BURNS. No, sir; except that they own the land.

Mr. STOLL. They had a profit of something like $285,000 on the construction of that plant for the Government?

Maj. BURNS. That is correct; yes, sir; if you include the overhead fee of $60,000 as profit.

Mr. STOLL. How much has the Government invested in Muscle Shoals?

Maj. BURNS. Nitrate plant No. 2 represents an investment of approximately $70,000,000; nitrate plant No. 1 represents an investment of practically $13,000,000;; the Wilson Dam——

Mr. STOLL. The Government has an investment there of something over $100,000,000, has it not?

Maj. BURNS. When we consider plant No. 1, plant No. 2, Gorgas power plant, and the dam, it is, roughly, $105,000,000.

Mr. STOLL. The Government in its operation of Muscle Shoals is to generate electric power to manufacture nitrates for the Ordnance Department and to manufacture nitrates to use in making fertilizer? That is the principal function of the Government at Muscle Shoals, is it not?

Maj. BURNS. Those plants were put up during the war for the purpose of manufacturing explosives.

Mr. STOLL. As it stands to-day, if it is developed it will be for electric power, explosives, and fertilizer.

Maj. BURNS. Those three could be produced.

Mr. STOLL. They have already invested there about $100,000,000?

Maj. BURNS. Yes, sir.

Mr. STOLL. What does the Alabama Power Co. develop?

Maj. BURNS. Power.

Mr. STOLL. That is one of the elements which the Government will develop?

Maj. BURNS. Yes, sir.

Mr. STOLL. What does the Air Nitrates Corporation develop?

Maj. BURNS. They are engaged principally in the manufacture of fertilizer materials.

Mr. STOLL. That is another element the Government would develop?

Maj. BURNS. Yes, sir.

Mr. STOLL. What does the American Cyanamid Co. develop?

Maj. BURNS. It is a company that develops fertilizer materials. The Air Nitrates Corporation is a subsidiary of the American Cyanamid Co.

Mr. STOLL. The only three companies that have an interest at Muscle Shoals, outside of the Government interests, develop power and ingredients of fertilizers?

Maj. BURNS. That is correct.

Mr. STOLL. How much money has the Air Nitrates Corporation invested in Muscle Shoals?

Maj. BURNS. None, so far as I know.

Mr. STOLL. How much has the American Cyanamid Co.?

Maj. BURNS. In so far as I know, they are in a similar position. Neither combination has any money invested.

Mr. STOLL. Whose interest do you think is paramount—the Government's, with over $100,000,000 invested there, or the interests of the Alabama Power Co., with a few million dollars invested?

Maj. BURNS. I think, without doubt, the Government's interest is always paramount.

Mr. STOLL. If the two interests conflict, whose interests must we look after?

Maj. BURNS. I think you must always look after the Government's interests.

Mr. STOLL. When you say we are under obligations to the Alabama Power Co. and, in your opinion, this Ford offer should be rejected rather than break a contract with the Alabama Power Co., your opinion is based more on a desire to save, as it were, the skin of the Ordnance Department for entering into a foolish contract than it is concerned with the rights of the Government to go ahead and do this particular thing?

Maj. BURNS. Not necesessarily. I think the Government's interests, as a matter of policy, would be best protected if it insisted upon living up to the Alabama Power Co.'s contract. I do not think you can always measure the Government's interest in dollars and cents.

Mr. STOLL. But we are considering this proposal from the standpoint strictly of Mr. Ford's offer, whether the Government should take the Ford offer, and in considering that there has been brought in the contract with the Alabama Power Co., so we are considering that contract solely in the light of the Ford offer, and you stated that you thought that ought to be thrown aside to protect the interests of the Alabama Power Co.

Maj. BURNS. Yes, sir; I made that statement.

Mr. STOLL. Suppose the Ford offer, in the opinion of Congress, would be beneficial to the Government, saving what they have already invested in producing elements that would be beneficial to the Government in time of war as well as in time of peace. Do you think the contract with the Alabama Power Co. is so paramount that you could let those other things go in order to protect them?

Maj. BURNS. If you take the stand that the Ford offer is of vital benefit to the United States, I can see only one conclusion to come to, and that is to accept the offer. But I do not take that stand.

Mr. STOLL. That is a hypothetical question, because we are considering the Alabama Power Co. solely in view of its relation to the Ford offer, and not what we would do with the Alabama Power Co. otherwise.

Maj. BURNS. My judgment is it would be to the best interests of the Government to live up to the contract.

Mr. STOLL. That is not the question. The question is, if the Ford offer is the best interest for the Government——

Maj. BURN. (interposing). You have made your answer.

Mr. STOLL. You think the Alabama Power Co.'s right should offset that?

Maj. BURNS. If you make that assumption to start with, you have also written the answer, I think.

Mr. STOLL. Then, you do not consider the Alabama Power Co.'s right necessarily so strong it would offset the Ford offer?

Maj. BURNS. I do; but you are assuming that it is not, and, therefore, you get another answer.

Mr. STOLL. Perhaps you did not catch the drift of my question.

Maj. BURNS. I think I did. You are assuming that the Ford offer is of paramount importance to the Government.

Mr. STOLL. No; I say if it is to the best interests of the Government, or if the Ford offer is good.

Maj. BURNS. If I understand your question, you put it this way: If it is to the best interest of the Government to accept this Ford offer, should we throw over the Alabama Power Co. contract? I say, if you believe it is to the best interests of the Government to accept the Ford offer as drawn you have written your answer.

Mr. STOLL. Suppose there is no controversy over the Alabama Power Co. at all; suppose there is no question about the Alabama Power Co.—that they have no claim—would you think the Ford offer good?

Maj. BURNS. It all depends on the point of view. If I were a farmer and had the farmers' interests solely at heart, I would say that the Ford offer is good. If I were a fertilizer man and had only the fertilizer interests at heart, I would say that the Ford offer is not good.

Mr. STOLL. Why?

Maj. BURNS. Because there is a great possibility of the Ford offer hurting the fertilizer business and the people who have their money so invested.

Mr. STOLL. By cheapening fertilizer?

Maj. BURNS. There is a possibility of that.

Mr. STOLL. Then from the standpoint of agriculture it would be a benefit?

Maj. BURNS. It has possibilities of benefits; yes, sir.

Mr. STOLL. I am glad you have made that statement. From the standpoint of developing the country down there through the use of electricity——

Maj. BURNS (interposing). In that case, also, in my judgment, the Ford offer has great possibilities.

Mr. STOLL. And from the other standpoint of providing in a permanent way, ready at all times to make the nitrates that your department needs in time of war, it would be beneficial from that standpoint?

Maj. BURNS. Yes, sir; it would.

Mr. STOLL. Then from every standpoint, leaving out the contract with the Alabama Power Co., the Ford offer is good.

Maj. BURNS. It has great possibilities; yes, sir.

Mr. STOLL. You have just admitted it was good.

Maj. BURNS. I did not say from every standpoint except one. That is where you put in a proviso I did not include.

Mr. STOLL. The fertilizer, the electrical power, and the explosives that you use in time of war are the only three elements involved; and if the thing is good, if the Alabama Power Co. had no contract, the interests of the Government at all times being paramount, why should we now throw it aside on account of this alleged interest of the Alabama Power Co.?

Maj. BURNS. My own judgment of that is that the Government should set the foremost example in living up to its contracts, and I think that is a greater matter of policy than anything else.

Mr. STOLL. But you just admitted that the Government's interest is paramount, and you admit that if these other things are true it would be for the good of the country.

Maj. BURNS. No; I did not say that. I said from certain points of view it would be good, and from other points of view it would not be good. I did not make the summarized statement.

Mr. STOLL. I think you have about admitted yourself out of court. That is all.

Mr. FIELDS. There is one question I overlooked, Major. The Government furnished the Air Nitrates Corporation the funds on which it operated, did it not, in the contruction of nitrate plant No. 2?

Maj. BURNS. Yes, sir.

Mr. FIELDS. And all the other plants that were built?

Maj. BURNS. Yes. sir.

Mr. FIELDS. What was the total claim of the Air Nitrates Corporation for the construction done for the Government?

Maj. BURNS. $1,500,000.

Mr. FIELDS. And they all applied to nitrate plant No. 2.

Maj. BURNS. Yes. sir; they could all be applied against that plant.

Mr. FIELD. Including the other plants, 3 and 4, what was the total for the entire construction program?

Maj. BURNS. $1,500,000. They earned their complete fee when $60,000,000 was expended, and since $70,000,000 was expended on No. 2 plant alone, that of itself earned for them the entire fee.

Mr. FIELD. This corporation, like the Alabama Power Co., also secured an option for the purchase of nitrate plant No. 2?

Maj. BURNS. Yes, sir.

Mr. FIELD. Do you feel that that places upon the United States the same moral obligation that the option of the Alabama Power Co. carries?

Maj. BURNS. I do not think that option is so important, because one of the provisos of that option is that they must agree to pay to the Government as good a return as the Government can get from somebody else.

Mr. FIELDS. If they come in and claim their right to purchase nitrate plant No. 2 just like the Alabama Power Co. claims its right to purchase the Gorgas plant, you think that the Government should also live up to that proposition?

Maj. BURNS. Yes, sir; I think there is an obligation also there to live up to the contract.

Mr. FIELDS. And are you aware of the fact that when the Government submitted to Mr. Duke, the moving spirit of the Air Nitrates Corporation and the American Cyanamid Co., an invitation to submit a proposition for the lease or purchase of nitrate plant No. 2, that he at that time declined to submit a proposition, condemned the operation of plant No. 2, either by the Government

or by private interests, and also recommended against the completion of dam No. 2; are you aware of that fact?

Maj. BURNS. I heard the letter read a day or so ago.

Mr. FIELDS. Was not the Alabama Power Co. included in that association of southern producers of power which also submitted to the Secretary of War a long letter recommending against the completion of Dam No. 2 and the operation of nitrate plant No. 2?

Maj. BURNS. I did not know their name was included in that association of power producers.

Mr. FIELDS. It is not clear in my mind whether it was or not.

Maj. BURNS. I did not hear it read.

Mr. FIELDS. I can hardly see where you distinguish between the option of the Alabama Power Co. and the option of the Air Nitrates Corporation on nitrate plant No. 2. If one is a binding obligation on the Government, it seems to me from your viewpoint the other would be binding upon the Government.

Maj. BURNS. I appreciate your point, but as I said before, the American Cyanamid Co. can not buy that plant unless it is willing to give as good a return to the United States as the United States is able to get from any other person. It is my own judgment that the American Cyanamid Co. would not give the United States what Mr. Ford is agreeing to give. Therefore, I feel, without knowing the facts in the case, that the American Cyanamid Co.'s option is not going to be any impediment at all.

Mr. FIELDS. In line with the questions asked by Mr. Stoll a moment ago, I will ask you, eliminating the Alabama Power Co. and the manufacturers of fertilizers in the country, to which you yourself referred, what is your opinion as a military man of the completion of Dam No. 2 and the development and operation of nitrate plant No. 2 from the standpoint of preparedness; is that of interest to the Government?

Maj. BURNS. Yes, sir; it is. I would like very much to see the dam completed and the plant operated.

Mr. FIELDS. What would be the annual cost of the maintenance of nitrate plant No. 2 in an idle stand-by condition?

Maj. BURNS. We are keeping it this year for a cost of about $125,000, with the additional proviso, however, that we are leasing the power plant for a fixed rental of $120,000 a year and an additional probable return of $140,000.

Mr. FIELDS. And if the Government should continue this operation for 20 years, what money would it have to expend for reinstallation and improvement of the plant?

Maj. BURNS. I can not answer that question, Mr. Fields, because it all depends on the life which you give to the plant in standby. It might all go to pieces in 10 years or it might not go to pieces for 50 years.

Mr. FIELDS. Is it not a fact from the standpoint of national preparedness that the Ford offer would be a great saving to the Government in the end, not including the 4 per cent interest on the investment, and the sinking fund, and the allowances for the maintenance of locks and dams Nos. 2 and 3, by reason of the fact that he must himself keep this plant in condition to operate, and turn it over to the Government upon five days' notice at any time the Government may want it.

Maj. BURNS. I think it would.

Mr. FIELDS. There is a very great element of cost there that must be met by Mr. Ford if he takes over the proposition in order to keep that plant in condition for the Government.

Maj. BURNS. He undoubtedly would bear the burden that the Government would otherwise have to bear or might have to bear.

Mr. FIELDS. If the Government should bear the burden of maintaining this plant in the condition that Mr. Ford proposes to maintain it, for the life of the proposed Ford lease, it would necessitate an expenditure of millions and millions of dollars on the part of the Government, would it not?

Maj. BURNS. It probably would. I would like to qualify that statement in this way: The Government, in my opinion, would only hold nitrate plant No. 2 until the business of nitrogen fixation was developed in America to such an extent that it could be depended upon. If it was never developed within 100 years, that might mean that the Government would retain that plant for 100 years. If, however, nitrogen fixation were an accomplished fact on a big business basis in 10 years, the Government would not be justified in carrying the plant any longer than 10 years.

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Mr. FIELDS. Your proposition hangs upon the possibility of the development of nitrogen fixation by private capital?

Maj. BURNS. Yes, sir.

Mr. FIELDS. There is just one other question that has been overlooked, in my judgment, all the way through that I desire to ask you about. What is the distance of the haul by water of Chilean nitrates from the Chilean mines?

Maj. BURNS. Roughly, 4,000 miles.

Mr. FIELDS. That is, through the canal?

Maj. BURNS. Yes, sir.

Mr. FIELDS. In time of stress, if the canal should for any reason be put out of commission, then what would be the distance?

Maj. BURNS. It might not be so very much greater, because in that instance you might take it up to the California coast and ship it across the continent by rail. If, however, you had to go around the Cape, I should imagine your distance would be at least doubled.

Mr. FIELDS. I just wanted to get that in the record. That is all.

Mr. MCKENZIE. Major, we are very much obliged to you, and the committee will now take a recess until 2.30 o'clock p. m.

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES.
Monday, February 13, 1922.

AFTER RECESS.

The committee met pursuant to recess at 2:30 o'clock p. m.

STATEMENT OF MR. WILLIAM B. MAYO, CHIEF ENGINEER OF THE FORD MOTOR CO., DETROIT, MICH.

The CHAIRMAN. Gentlemen of the committee, this is Mr. Mayo, who represents Mr. Ford in th's proposition. He has come here from Detroit and desires to be heard regarding the matter.

Will you kindly state your name in full?

Mr. MAYO. William B. Mayo.

The CHAIRMAN. And also explain the position you occupy?

Mr. MAYO. Ch'ef engineer of the Ford Motor Co.

The CHAIRMAN. How long have you been with Mr. Ford?

Mr. MAYO. About eight years.

The CHAIRMAN. Are you acquainted with the Muscle Shoals development?

Mr. MAYO. Fairly well, I think.

The CHAIRMAN. To what profession do you belong? Are you an engineer?

Mr. MAYO. Yes, sir.

The CHAIRMAN. And you have been acting as an engineer for Mr. Ford?

Mr. MAYO. Yes, sir.

The CHAIRMAN. Are you familiar with the offer that Mr. Ford made for the Muscle Shoals plant?

Mr. MAYO. Yes, sir. --

The CHAIRMAN. It will not be necessary, therefore, to call your attention to the contract or the proposal that he has submitted.

Mr. MAYO. I think not.

The CHAIRMAN. Of course, the first proposal he submitted on July 8, 1921, he has asked to be superseded by a later proposal which he signed January 25.

Mr. MAYO. Yes, sir.

The CHAIRMAN. And gave to the Secretary of War on January 27.

Mr. MAYO. Yes, sir.

The CHAIRMAN. The committee has a few matters about which they have insufficient information, and they would like you, if possible, to tell just what Mr. Ford proposes to do. There is nothing said in the proposal regarding the company of which Mr. Ford speaks, whether it is going to have a capital stock or not; what the capital stock will be, if they propose to have capital stock; could you inform the committee regarding that matter?

Mr. MAYO. Mr. Ford has not fully determined whether he will operate as a company or under his own name.

The CHAIRMAN. Or under his name?

Mr. MAYO. He has not fully determined which way he will operate, yet.

The CHAIRMAN. He has not?

Mr. MAYO. No, sir.

The CHAIRMAN. If he should operate as a company do you think he will operate with a certain amount of capital stock?

Mr. MAYO. He will have to operate with sufficient capital to properly handle the business, certainly.

The CHAIRMAN. But you can not give the committee any idea of just what amount of capital that will be?

Mr. MAYO. Not other than to say it will be sufficient to properly conduct the business.

The CHAIRMAN. Will Mr. Ford be able to tell the committee of Congress before very long how much money he expects to organize for?

Mr. MAYO. I think likely; yes, sir.

The CHAIRMAN. It is the desire of the committee and the desire of Congress to get this thing through with as early as possible. How long do you think it would take Mr. Ford before he could let this committee know just how much capital stock he would organize for?

Mr. MAYO. I hardly think it would be fair to press him for a definite sum at this time, until he has worked out the needs of the company.

The CHAIRMAN. How long a time do you think he would require?

Mr. MAYO. He is going through the process of working out several schemes in handling the plant as a whole, and it is rather difficult to determine what amount is needed until he finally decides on a definite course of procedure.

The CHAIRMAN. That is one of the matters that the committee have expressed a desire to know about, and that is why I am asking you the question.

Mr. MAYO. I understand, but I do not quite get the point. I do not see how the amount of capital necessarily enters into it.

The CHAIRMAN. I think one of the witnesses, or one of the members of the committee, tried to show two or three days ago that there were 10 gentlemen who organized the Air Nitrates Corporation, or some organization of that kind, and put up $100 apiece and organized for a very large amount. While, of course, Mr. Ford does not anticipate anything of that kind, yet I think the committee would like to know about how much he would want to incorporate for.

Mr. PARKER. Mr. Chairman, I think they would want to know the least amount that he would incorporate for.

Mr. MAYO. It goes without saying that he could not operate without placing $5,000,000 there.

The CHAIRMAN. That is the amount he is willing to pay for nitrate plant No. 2.

Mr. MAYO. And having paid his $5,000,000, he necessarily must furnish the necessary additional capital to operate, so that if there could be a minimum amount named, the cost plus the operating capital to start with would be the minimum figure.

The CHAIRMAN. You, at least, have no definite knowledge upon that subject?

Mr. MAYO. No; that has not been determined as yet.

The CHAIRMAN. The committee also expressed some desire to know this: The Secretary of War stated to the committee that he had had some interviews with Mr. Ford, and that on one occasion at least Mr. Ford told him that if he could not make fertilizers profitably he would cease the work entirely. Does that express Mr. Ford's view?

Mr. MAYO. I think it necessarily follows that if you operate continually at a loss you would soon go out of business; that is the natural sequence. He did not try to lead the Secretary to believe that he would stop making fertilizer and manufacture something else.

The CHAIRMAN. But I think in his offer he speaks of nitrate plant No. 2.

Mr. MAYO. Yes, sir.

The CHAIRMAN. He agrees to keep that going for 100 years.

Mr. MAYO. Yes, sir.

The CHAIRMAN. I think the testimony before the committee is that that plant makes a nitrate which can be used for making fertilizers?

Mr. MAYO. Yes, sir.

The CHAIRMAN. Would you stop operating the plant altogether if the manufacture of nitrates should be unprofitable?

Mr. MAYO. I do not quite understand you.

The CHAIRMAN. You said that if he could not manufacture nitrates profitably to make fertilizers, he would have to go out of business. Now, he makes a positive offer on nitrate plant No. 2.

Mr. MAYO. Yes, sir.

The CHAIRMAN. And offers to turn it over at a moment's notice for the use of the Government in case the Government should require him to manufacture explosives. Now, I understand from the evidence before the committee that they manufacture nitrates at this plant?

Mr. MAYO. Yes, sir.

The CHAIRMAN. And that the nitrate is used as a component part of the fertilizer. Now, would he stop making that in case it should be unprofitable?

Mr. MAYO. If it was unprofitable he might have to switch to some other process.

The CHAIRMAN. That is his idea?

Mr. MAYO. Oh, yes.

The CHAIRMAN. You do not think he would quit running the plant if the profits were not as big as he had anticipated?

Mr. MAYO. He has not that kind of a record.

The CHAIRMAN. I quite agree with you. He speaks of the land and flowage rights necessary for Dam No. 3. I think the testimony before the committee is to the effect that the amount required for the acquisition of those rights will be in the neighborhood of $4,000,000. Do you think he would be willing to allow 4 per cent to the Government for anything that is laid out for that purpose?

Mr. MAYO. I do not think so. I think the amount you stated, though, is very high. I notice the Government estimate is $2,331,000. We had estimated a maximum amount of not over $1,500,000 and we are quite sure it will not run over $1,000,000.

The CHAIRMAN. For the flowage rights.

Mr. MAYO. Mr. Ford had thought that the necessary amount ought to be charged to navigation.

The CHAIRMAN. To what?

Mr. MAYO. To navigation.

The CHAIRMAN. He does not think he should be called upon to assume any of that, not even to the extent of paying 4 per cent interest?

Mr. MAYO. He has not thought so, so far; no, sir.

The CHAIRMAN. It has been suggested that if Mr. Ford should acquire this property, any power he might sell from the Muscle Shoals plant ought to be developed and he should be required to dispose of it on the terms and conditions imposed by the Federal Power Commission or the public service corporation commission of Alabama. Do you know whether Mr. Ford has given that matter any thought?

Mr. MAYO. He has, and it has always been our impression that we would probably come under the State of Alabama law.

The CHAIRMAN. That is his impression at this time?

Mr. MAYO. Yes, sir.

The CHAIRMAN. You would be perfectly able and willing to sell the power in that way?

Mr. MAYO. So far as I know; yes, sir.

The CHAIRMAN. In reference to the 100-year agreement, there seems to be a difference of opinion whether the agreement should run for 50 years or 100 years.

Mr. MAYO. Yes, sir.

The CHAIRMAN. The Secretary of War notified this committee that he was under the impression that it ought to be limited to 50 years and that any effort to extend beyond that period would not be good public policy.

Mr. MAYO. Yes, sir.

The CHAIRMAN. Have you thoroughly thought out that matter?

Mr. MAYO. Mr. Ford has given that a great deal of thought and he thinks that very few really know the magnitude of this project, and, as he proposes to use all this power himself, eventually, it will take a very large investment down there and quite a few years to build up to it.

The CHAIRMAN. He proposes to use all the power himself?

Mr. MAYO. He expects to.

The CHAIRMAN. That is a pretty big proposition, is it not?

Mr. MAYO. We realize it; yes, sir. The point is if the offer is accepted we will have such a very large investment at Muscle Shoals in the course of the next 10 or 15 years that we could not afford to risk that much of an investment there and run the risk of having the power end of it cut from under your feet at the end of 50 years.

The CHAIRMAN. Personally, I do not think——

Mr. MAYO (interposing). It is different from a great many projects, in that the Muscle Shoals district is more or less of a virgin country, and we have to develop everything there.

The CHAIRMAN. I do not think that is a very serious complaint. For myself, I am perfectly willing to stand by a 100-year agreement.

Mr. MAYO. In general, that is his thought. Mr. Ford has a $5,000,000 investment to start with, and to my mind that is but a drop in the bucket. That is

why I also think the amount of capital is hardly worth talking about at this time.

The CHAIRMAN. That is not a very material matter, in your opinion?

Mr. MAYO. Not at all. The investment will be so very large that there will always be plenty for the Government or anybody else to hold in case of trouble.

The CHAIRMAN. How many years do you think it will take for the investment to be fully developed?

Mr. MAYO. Well, it is pretty hard to venture a guess; I would say in 15 or 18 years, or some such time.

The CHAIRMAN. The world has not known very much about this matter of the fixation of nitrogen very long, has it?

Mr. MAYO. No, sir.

The CHAIRMAN. And you are willing to take all this chance with the limited knowledge that the world has of the proposition?

Mr. MAYO. Well, Mr. Ford does not think he is taking much chance.

Mr. MCKENZIE. Mr. Mayo, one of the propositions involved in the Ford offer, and one which has been giving us no little concern, is what is known as the Gorgas or Warrior River plant owned and operated by the Alabama Power Co.

Mr. MAYO. I understand.

Mr. MCKENZIE. What is your idea as to the absolute necessity of including the Warrior River plant of the Alabama Power Co.'s project in Mr. Ford's offer.

Mr. MAYO. The real necessity as he looks at it is to have the steam power during the low-water period so as to increase the primary power.

Mr. MCKENZIE. Does he feel it is absolutely essential, at least for many, many years to come, to have the additional power that would be furnished by this Warrior River power plant?

Mr. MAYO. It is more essential now than it will be later.

Mr. MCKENZIE. You are perfectly familiar with the situation down there at the Gorgas plant, I take it.

Mr. MAYO. I think so.

Mr. MCKENZIE. You know how it is constructed?

Mr. MAYO. Fairly well. I have never seen it.

Mr. MCKENZIE. From a description given here this morning by an Army officer, it is more intricately woven into the property and interests of the Alabama Power Co. than the League of Nations was in the treaty of Versailles, and it would be almost impossible, so it strikes me, as a member of this committee, to undertake to separate the interests of the Government from the interests of the Alabama Power Co., and that would necessitate possibly the taking over of the rights of the Alabama Power Co.

Mr. MAYO. That might be, but we never thought so.

Mr. MCKENZIE. And this officer stated it would be practically impossible to unscramble the rights of the Government from those of the Alabama Power Co., and it had been my hope, at least, as one of the members of the committee, that we might bring about some acceptance of this offer without this complication—that is, that some acceptance of the offer might be arrived at between Mr. Ford and representatives of the Government which would very materially simplify the whole proposition, but you say you have not looked into that matter very closely, as I understand it.

Mr. MAYO. Not so very, but we have always been of the opinion it could be unscrambled all right.

Mr. MCKENZIE. But in your proposed contract you put the responsibility of the unscrambling on the Government.

Mr. MAYO. I know it.

Mr. MCKENZIE. And that is one of the propositions included in your offer?

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. And your offer must either stand or fall on the Government delivering the property it contracts to deliver to Mr. Ford. Now, then, if we should get into litigation and it should be held by the courts that the Governmen could not deliver this property to Mr. Ford, then all of our work would have been in vain.

Mr. MAYO. I see.

Mr. MCKENZIE. Because the whole proposition would fail.

Mr. MAYO. I am sure Mr. Ford does not expect to ask the Government to do anything that is physically impossible.

Mr. MCKENZIE. I think that is true.

Mr. MAYO. He thinks it can be worked out. If it can be shown him——

Mr. MCKENZIE (interposing). I have wondered whether Mr. Ford is thoroughly familiar with the existing condition of things at that plant.

Mr. MAYO. I would not say he was thoroughly familiar but quite familiar, and he is of the opinion it can be worked out.

Mr. MCKENZIE. As a simple offhand proposition, not knowing any of the details, I felt at first, when I read the offer, "that is all right; that is easy enough; we will just turn that over;" but there is more than that to it, it is the most difficult proposition, in my judgment, the way the thing has been constructed, whether intentionally or otherwise, and the Alabama Power Co. have themselves fortified in a position that is most lamentable, in my judgment, in connection with this whole proposition; to be as charitable as possible, I would say that.

Mr. MAYO. I see.

Mr. MCKENZIE. It would probably cost the Government more than Mr. Ford's entire offer of $5,000,000 in order to be able to deliver to him this one element of the contract, to say nothing of the other property which we would expect to deliver to him. Now, in speaking of the manufacture of this element which can be used in the manufacture of fertilizer, and without using any of the technical or chemical terms, I will simply speak of it as nitrate, which can be produced at Muscle Shoals, and I understand you to say that as long as it is profitable or can be produced without a loss Mr. Ford would be glad to continue to produce that product.

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. And I think you stated it very correctly when you said that it is a fair assumption that if it was being produced at a loss it would only be a matter of time when even Mr. Ford, with all his wealth, would go out of business, and therefore the element of profit or the cost of manufacture has to be taken into consideration.

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. The price of fertilizer, I take it, the same as the price of any other product, is fixed ordinarily, under the laws of trade, by competition.

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. And in this country we have certain manufacturers of fertilizer. That rule, however, can be overcome by what is known as combinations or trusts, and if all the fertilizer manufacturers of the country, including Mr. Ford, would enter into a trust, they could fix the price of fertilizer in this country. I am not assuming that Mr. Ford is a believer in the forming of trusts to put up a price of a commodity to the people of this country, but that could be done, and if that is done, of course, then the only competitor that Mr. Ford would have or the other manufacturers of this so-called fertilizer would be the importations from Chile and other outlying countries, is not that true?

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. Now, as a matter of fact, knowing Mr. Ford as you do, have you any fear in your mind that with his splendid organization he could not compete successfully with the other manufacturers in this country.

Mr. MAYO. I am absolutely sure of it.

Mr. MCKENZIE. In the production of that product.

Mr. MAYO. I am absolutely sure that he could do so.

Mr. MCKENZIE. Then the only thing he would have to fear, of course, and which might put him out of business, would be the low price of imported nitrate.

Mr. MAYO. I do not have any fear of that.

Mr. MCKENZIE. I think I agree with you on that, but if that should happen, then the American agricultural people would not hold Mr. Ford responsible for not selling fertilizer to them at a higher price, but would be glad to have it imported from a foreign country at even a lower price than Mr. Ford could produce it.

Mr. MAYO. Yes.

Mr. MCKENZIE. So there would really be no great harm done under those circumstances if Mr. Ford ceased to manufacture fertilizer; is that true?

Mr. MAYO. That is true, but I think it goes without saying that he could find some process wherein he could meet any competition. We consider the plant so situated naturally, and with the very cheap power, that you have all the fundamentals with which to make a very cheap fertilizer.

Mr. MCKENZIE. I think that is true, and the 8 per cent you would consider a fair measure of profit on the expenditures.

Mr. MAYO. We think so.

Mr. McKENZIE. And he is willing to be limited to 8 per cent?
Mr. MAYO. Yes, sir.
Mr. McKENZIE. I believe you have explained your views on the 100-year lease or franchise, and, of course, it goes without saying that if the Congress should determine they would not accept the 100-year proposition but would accept a 50-year proposition, that would involve an entire change of the whole offer made by Mr. Ford.
Mr. MAYO. Yes, sir.
Mr. McKENZIE. And would materially increase the cost to Mr. Ford and accordingly, in my judgment, depreciate the value of it to the Government.
Mr. MAYO. Yes, sir.
Mr. McKENZIE. In regard to the so-called guaranty in the proposed contract, and in relation to the questions asked by our chairman as to the necessity of having a capital stock named, I presume one of the reasons why Mr. Ford put into this contract that he was binding his heirs and assigns, as well as binding the corporation or company that might hereafter be created, goes to show that he has not at this time, as you say, made up his mind as to whether he will operate it as a company or corporation or as an individual.
Mr. MAYO. Yes, sir.
Mr. McKENZIE. And you feel that with the expenditure of money he will be immediately called upon to expend at this plant, that that would be a sufficient guaranty, as a matter of protection to the taxpayers of the country and the people of the county, without his putting up his individual bond or a guaranty of so much capital stock on the part of the company.
Mr. MAYO. Yes, sir. If you forced him to raise capital to an extent where he would have some idle capital lying by, that would naturally increase the cost of his product.
Mr. McKENZIE. That explains, then, to some extent, that provision in his proposal; is that the idea?
Mr. MAYO. Yes, sir.
Mr. MORIN. Do you agree that the estimate of cost of completing Dam No. 2 and building Dam No. 3 is accurately estimated by the Army engineers at $50,000,000?
Mr. MAYO. I think that is considerably more than it will cost.
Mr. MORIN. Is it your judgment that the flowage rights which the Government is to acquire under the Ford offer can be purchased for the $2,331,000 estimated by the Government engineers as the cost?
Mr. MAYO. I am of the opinion they can be secured for less.
Mr. MORIN. How much less?
Mr. MAYO. Not over $1,500,000 total cost.
Mr. MORIN. It would not cost more than $1,500,000?
Mr. MAYO. Not to exceed $1,500,000.
Mr. MORIN. Would not this item be nearer $5,000,000?
Mr. MAYO. I do not think so.
Mr. MORIN. Or $10,000,000, or even more, considering present values of land and the necessity of acquiring lands for railway and terminal connections as imposed by Mr. Ford's offer?
Mr. MAYO. I do not think so; no, sir.
Mr. MORIN. What are these "railway and terminal connections"?
Mr. MAYO. The only thing I call to mind is the present track connections that now exist, with the possible addition of two single track lines to Dam No. 3, which need only be temporary, I should say.
Mr. MORIN. They are the only connections you recall?
Mr. MAYO. Yes, sir.
Mr. MORIN. On its amount, whatever its cost, Mr. Ford seemingly would pay no interest; is that your understanding?
Mr. MAYO. I do not follow you. You are talking about this track or right of way?
Mr. MORIN. Yes; the connections that would have to be secured there by the Government.
Mr. MAYO. They have already been secured; all except the rights of way to Dam No. 3. They exist at present.
Mr. MORIN. You will note that the Secretary of War recommends that this sum be included in the sum upon which Mr. Ford is to pay interest. His letter of transmittal states: "The omission of the cost of these lands from this computation is more serious than would be the omission of the provision for a sinking fund, for the annual interest at 4 per cent on the cost of such lands, and rights if used for this purpose would amortize a sum much larger than that provided in paragraph 10 of Mr. Ford's proposal." What is your opinion of that?

Mr. MAYO. I think you are confusing that with the flowage rights for Dam No. 3.
Mr. MORIN. No; I do no think so.
Mr. MAYO. That subject has never been brought up, as I remember.
Mr. MORIN. The Secretary of War refers to it in his statement. What about the flowage rights for Dam No. 3, then?
Mr. MAYO. We are of the opinion that they can be purchased at a maximum sum of $1,500,000, and the cost of that should be charged to navigation. That has been Mr. Ford's idea.
Mr. MORIN. Mr. Ford agrees to pay 4 per cent on the actual cost of acquiring lands and flowage rights, etc., in the case of Dam No. 2; that is correct, is it?
Mr. MAYO. I think it is.
Mr. MORIN. Are not those dams and flowage rights already paid for and acquired at Dam No. 2, and constitute a part of the $17,000,000 already expended at that point?
Mr. MAYO. Most of them. I think a few parcels are under lease.
Mr. MORIN. Then, Mr. Ford does not intend to reimburse the United States for any part of the $17,000,000, does he?
Mr. MAYO. Well, in our sinking fund, if the Government invests that sinking fund on the basis of, say, 4½ per cent, it would take care of over $58,000,000 of cost. If the cost of the two dams, for instance, does not exceed $40,000,000, then it would wipe out the entire $17,000,000 that have been spent, and more.
Mr. MORIN. I hardly think that is an answer to my question. My question was whether Mr. Ford intends to reimburse the United States for any part of the $17,000,000 under his proposal?
Mr. MAYO. I am of the opinion that I was answering that. We establish a sinking fund to wipe out the cost of this work, and we state the definite amount of that sinking fund. If the Government invests that on the basis of 4½ per cent—I did not read the figures right before—it will wipe out $70,000,000 in the 100 years.
Mr. MORIN. Your idea is that he does propose to reimburse the Government?
Mr. MAYO. If we are fortunate to keep the cost of Dams No. 2 and No. 3 as low as, say $40,000,000, then you will have $30,000,000 left to wipe out the original investment, which you say is $17,000,000.
Mr. MORIN. Mr. Ford's offer contemplates the free and unencumbered title to all of the property to be transferred to him, so that he contemplates paying no interest on any sums to acquire such clear title, whether by condemnation or otherwise; is that true?
Mr. MAYO. He pays interest on only the cost of the dams.
Mr. MORIN. This sum for clearing title may aggregate several million dollars, may it not?
Mr. MAYO. I do not think so.
Mr. MORIN. During the construction period of several years, although the Government is supplying funds for construction aggregating perhaps $50,000,000 from the very beginning of construction, Mr. Ford pays a total rental of $1,200,000 for a 6-year occupancy of Dam No. 2, at the rate of $200,000 a year, and a total rental of $480,000 for a 3-year occupancy of Dam No. 3, at the rate of $160,000 a year, which is, in the case of Dam No. 2, a return of eight-tenths of 1 per cent per annum on $25,000,000 of Government money for a period of six years, and in the case of Dam No. 3 a return of sixty-four one-hundredths of 1 per cent on $25,000,000 of Government money for three years, as I figure it. These figures are substantially correct, are they not?
Mr. MAYO. I do not know about the totals. It is plainly stated in the offer as to when the payments commence and the amounts. You could not expect Mr. Ford, I do not think, to pay interest on property until he can occupy it and until it is ready to operate.
Mr. MORIN. Why should Mr. Ford not pay 4 per cent during this period, particularly as his aforesaid payments do not begin until a year after the plants have actually been in operation?
Mr. MAYO. We have to build our factory and develop our processes for whatever we intend to make up before we commence taking power, and it takes a considerable amount of time for that. We have tried to make the estimates so that he commences to pay when he commences to use the power.

Mr. MORIN. Whether he should pay or does not so pay 4 per cent for this period, we have to consider as capital to be supplied by the United States the interest lost on the Government's money for a period of six years in one case and three years in another, do we not?

Mr. MAYO. Yes, sir.

Mr. MORIN. These figures are summarized by the Chief of Engineers under date of January 30, 1922. (P. 2 of Exhibit E.)

Funds required to complete Dam No. 2	$25,000,000
Interest during construction, one-half of three years, at 5 per cent	1,875,000
Interest for first six years subsequent	$7,500,000
Less six payments by Mr. Ford	1,200,000
Net deficiency	6,300,000
Total accrued interest before full payments begin	8,175,000
Funds required to complete Dam No. 3	25,000,000
Interest during construction, one-half of three years, at 5 per cent	1,875,000
Interest for first three years subsequent	$3,750,000
Less three payments of $160,000 by Mr. Ford	480,000
Net deficiency	3,270,000
Total accrued interest before full payments begin	5,145,000
Loss to Government during above periods	13,320,000

Is this not true?

Mr. MAYO. We can not reconcile those figures. We will, however, make up our figures as we have figured it, for the record.

Government balance sheet of Muscle Shoals during construction and for first six year under Ford proposal.

Assume: Dam No. 2 completed in two years, or one year after first 100,000 horsepower is installed; Dam No. 3 completed in three years, or one year after first 80,000 horsepower is installed; cost of Dam No. 2, $23,230,000; cost of Dam No. 3, $19,000,000.

Progress of work.	Years from start of work.	Years of Mr. Ford's lease of Dam No. 2.	Ford payments. Account Dam No. 2.	Ford payments. Account Dam No. 3.	Government interest. Account Dam No. 2.	Government interest. Account Dam No. 3.	Remarks.
Work starts on both dams.	0	.....	0	0	0	0	Government does not pay interest in advance.
100,000 horsepower ready at Dam No. 2.	1	0	0	0	[1] $464,600	[1] $240,000	Lease of Dam No. 2 begins.
Dam No. 2 completed; 80,000 horsepower ready at Dam No. 3.	2	1	$200,000	0	[1] 929,200	[1] 480,000	Lease of Dam No. 3 begins.
Dam No. 3 completed.	3	2	200,000	$160,000	929,200	[1] 760,000	
	4	3	200,000	160,000	929,200	760,000	
	5	4	200,000	160,000	929,200	760,000	
	6	5	200,000	760,000	929,200	760,000	
	7	6	200,000	760,000	929,200	760,000	
Total	.....	.....	1,200,000	2,000,000	6,039,800	4,520,000	
Grand total	.....	.....	3,200,000		10,559,800		
Difference	.....	.....	7,359,800				Deficit in interest payments.

[1] Interest during construction.

NOTE.—This is $5,960,200 less deficiency in interest during this preliminary period than is stated by the Chief of Engineers in his report of Jan. 30, 1922. His estimate of this deficiency is $13,320,000. This deficiency in interest is much more than offset by Mr. Ford's single item of maintenance of nitrate plant No. 2 on which the Ordnance Department figures 5 per cent annual depreciation amounting in the 6 years to $14,100,000 on a plant valuation of only $47,000,000.

Mr. MORIN. Considering now the money required to be invested by the Government for flowage rights, rights of way, land for railway and terminal connections—estimated at $2,000,000 by the Army engineers—is it your judgment that this sum is adequate? May it not, in fact, run several times that sum?

Mr. MAYO. No.

Mr. MORIN. Mr. Ford's offer contemplates a free and unencumbered title to all the property to be transferred to him, so that he contemplates paying no interest on any sums required to acquire said clear title, whether by costly condemnation proceedings or otherwise; is this correctly stated?

Mr. MAYO. No, sir; the Government has to do that anyway to clear its own title.

Mr. MORIN. This clearing up of title may require several million dollars, may it not?

Mr. MAYO. I should think not.

Mr. MORIN. Assuming that this item is, say $5,000,000, it appears that the following sums will be necessary to carry out the Ford offer:

For Dams Nos. 2 and 3, $50,000,000; for flowage rights, rights of way, and terminals, $2,000,000; for clearing title, $5,000,000; for interest charges lost, $13,320,000: a total of $70,320,000. If these totals are correct, and they seem to me to be, the minimum sum required we find as capital required an amount aggregating $70,320,000, on only $50,000,000 of which Mr. Ford pays interest. This leaves a sum exceeding $20,000,000 on which the United States must continue to pay interest, if at 5 per cent, as calculated by the Chief of Engineers, of over $1,000,000 annually for the term of the lease; is that correct?

Mr. MAYO. No, sir. The question is too long to give a definite answer to, but all the figures are greatly in excess of what they should be.

Mr. MORIN. These figures are susceptible to your analysis as an engineer and it would be of advantage to the record if you will point out any discrepancies.

Mr. MAYO. All right, sir.

Mr. MORIN. And will you put them in the record?

Mr. MAYO. Yes, sir.

Analysis of Mr. Morin's statement of noninterest-bearing charges on Dam No. 2.

Item.	Mr. Morin's estimate.	Mr. Ford's engineers' estimate.	Remarks.
Cost of completing Dam No. 2 and building Dam No. 3.	$50,000,000	$42,230,000	Discrepancy largely accounted for by economies possible with private rather than Government construction. Unit prices lower account decreased market prices.
Flowage rights, rights of way, and terminals.	2,000,000	1,650,000	No disposition to hold reservoir lands for high prices is evident locally. Nearly all rights of way and terminals have been acquired.
For clearing title	5,000,000	500,000	There would be 1,067 acres for a 100 foot right of way 88 miles long; at $100 per acre (for rough hilly ground) it would cost $106,700. This is the principal part of this item of cost.
Interest charges lost	13,320,000	7,359,800	See detailed statement above.
Total	70,320,000	51,739,800	
Amount on which Mr. Ford does not pay interest.	20,320,000	9,509,800	No analysis of the Ford offer is fair or complete which omits his obligations regarding the nitrate plant. The single item of depreciation on this plant, taken at a normal peace-time value of $50,000,000, amounts to $2,500,000 annually and will much more than offset Mr. Morin's items taken at his own figures.
Interest on same at 4 per cent	812,800	380,392	
Against which there is an offset because of the fact that Mr. Ford carries the depreciation on nitrate plant No. 2 amounting annually to—	2,500,000	2,500,000	

Mr. MORIN. What is your estimate of the total new money that must be spent by the Government to carry out the Ford offer?

Mr. MAYO. I am of the opinion it will not exceed $45,000,000.

Mr. MORIN. Mr. Ford's proposal covers a $35,000 yearly payment for maintenance of Dam No. 2 and a $20,000 yearly payment for maintenance of Dam No. 3. Is it your opinion as an engineer that these sums are adequate in view of maintaining intact and in first-class condition masonry structures, gates, and hydraulic equipment costing some $30,000,000 or more?

Mr. MAYO. I think so.

Mr. MORIN. These amounts are less than two-tenths of 1 per cent of such cost. Is it not customary of work of such character and hazard to figure bare maintenance cost at a much higher figure, say 1 per cent or more?

Mr. MAYO. I think not. The amount does not include the upkeep on the power plant which is taken care of by Mr. Ford.

Mr. MORIN. Would even 1 per cent be a safe figure when the risk of flood damage and responsibility for life and property is considered, this responsibility being entirely carried by the Government?

Mr. MAYO. We have figured the amount we could afford to pay for maintenance based on what we figure we can pay for the cost of the power, and that allows us to allot that much for the maintenance.

Mr. MORIN. This responsibility for and maintenance of dams of this magnitude and character on a stream of the type of the Tennessee where severe flood conditions frequently occur, is a real hazard which engineering skill in design and construction can not completely remove, is it not?

Mr. MAYO. Yes, sir.

Mr. MORIN. There have been, to your knowledge, many expensive and disastrous failures of such structures, have there not?

Mr. MAYO. Yes, sir.

Mr. MORIN. What if the dams should fail in whole or in part, or foundations prove defective, would it be the task of the United States under this offer to rebuild the structure or remedy the defects?

Mr. MAYO. Yes, sir.

Mr. MORIN. It would be?

Mr. MAYO. Yes, sir.

Mr. MORIN. And on this further new money would Mr. Ford pay interest?

Mr. MAYO. That has not been contemplated.

Mr. MORIN. Is it possible for these failures to occur?

Mr. MAYO. Almost anything is possible.

Mr. MORIN. Then it is possible. And that such failures might involve large sums of new money running into the millions?

Mr. MAYO. It might.

Mr. MORIN. And under the Ford offer these risks are entirely borne by the United States?

Mr. MAYO. Yes, sir.

Mr. MORIN. The fixation of atmospheric nitrogen is a new art, is it not?

Mr. MAYO. Quite new, relatively so.

Mr. MORIN. What nitrogen fixing plants are there in operation in the United States?

Mr. MAYO. The one at Syracuse, N. Y.

Mr. MORIN. Is that the only one?

Mr. MAYO. I think so.

Mr. MORIN. What plants are there abroad that you know of?

Mr. MAYO. I will put that statement in the record. I have not a list of them all.

World capacity of air nitrogen plants.

[Metric tons of nitrogen (2,204 pounds per ton).]

	Haber.	Cyanamid.	Arc.	Total.
Germany	300,000	93,000	.....	393,000
France	.....	40,000	1,000	41,000
Italy	.....	12,000	1,000	13,000
Scandinavia	.....	28,000	30,000	58,000
Austria	.....	22,000	.....	22,000
Switzerland	.....	7,500	.....	7,500
Japan	.....	12,000	.....	12,000
Canada	.....	12,000	.....	12,000
United States	(1)	40,000	.....	40,000
Total	300,000	266,500	32,000	598,500

[1] There should be added about 3,000 tons to cover the probaple output of the modified Haber process plant recently installed at Syracuse, N. Y. Nitrate plant No. 1 at Muscle Shoals was designed for this process, but being unworkable without extensive rebuilding, is omitted.

American Fertilizer Handbook, 1920, p. 39.

Mr. MORIN. I wish you would. What are the several processes so far developed?

CONVERSION OF ATMOSPHERIC NITROGEN.[1]

The conversion of the nitrogen of the air into compounds available for use may be accomplished in several ways, the principal ones of which are:

1. The direct oxidation of nitrogen and its conversion into nitric acid.
2. The combination of nitrogen with metals to form nitrides, which may be treated to furnish ammonia.
3. The formation of cyanides or cyanogen compounds by combination of nitrogen with metals and carbon.
4. The formation of a compound with carbide, producing cyanamid.
5. The direct combination of nitrogen and hydrogen from its elements for the formation of ammonia.

THE ARC PROCESS.

The direct oxidation of nitrogen in the electric arc to form nitric acid was the first of the processes to be developed abroad. Many forms of arcs, through which air passes or is blown, have been proposed, but the principle involved is the same, the union of oxygen and nitrogen at the temperature of the arc. The only commercially successful plant is located in Norway, where electric power is cheap. The method itself is very inefficient as regards production in relation to power consumed. The low cost of electric power in Norway makes the process workable there.

It is generally conceded that this process would not be adapted, in its present state of development, for use in the United States. Apparently there is not a sufficiently large amount of cheap hydroelectric power available in America within reach of points where nitric acid would be used. The cost of installing the process is high, and the product, nitric acid, is not economically transportable. Nitric acid is not readily converted into materials that are used for fertilizers. Calcium nitrate and ammonium nitrate formed by neutralizing nitric acid with lime or ammonia are of some value as fertlizer material, but can not be used readily in mixed fertilizers demanded by American farmers. In spite of the simplicity of the arc process, and the supply of raw material without cost, the disadvantages are seemingly greater than the advantages for this country.

NITRIDE PROCESS.

The nitride process consists of the combination of nitrogen with various materials under the influence of high heat, and the nitrides produced may be treated subsequently to furnish ammonia. The best developed of the nitride process is that of making aluminum nitride from alumina, coke, and nitrogen heated to a temperature of about 1,800 ° C. in an electric furnace. The process has not been developed sufficiently to show what the ultimate power requirements would be, although they are known to be rather high. At present, however, it is not used on a commercial scale for the production of ammonia.

CYANIDE PROCESS.

The cyanide process is one depending upon the formation of cyanides by the combination of nitrogen with metals and carbon. There is no difficulty in the chemical reaction involved. Sodium carbonate, ground coke, or carbon in some other form is brought into contact with finely divided iron and heated to redness, and nitrogen or air passed through the mass. The nitrogen is fixed as sodium cyanide. The reactions take place readily, but mechanical difficulties of carrying them out have not as yet been entirely solved. The sodium cyanide formed may be readily converted into ammonia, and the sodium carbonate recovered for further use. The product obtained here, as in the case of the nitride process, is ammonia. This process, however, at present is not a commercial success.

[1] An extract from a paper entitled "Atmospheric nitrogen for fertilizers," by R. O. E. Davis, scientist, U. S. Bureau of Soils.

CYANAMID PROCESS.

The cyanamid process consists of the union of nitrogen with carbide at the temperature of the electric furnace. Raw materials required in the process are lime, anthracite coal, or coke for producing calcium carbide and nitrogen obtained from liquid air. The process consists of the production of the carbide in a large furnace by heating lime and coke or anthracite coal. The second step involves the fine grinding of the calcium carbide without contact with air and heating the ground mass to a red heat, when nitrogen is introduced and is absorbed by the carbide to form cyanamid. The cyanamid may be treated with steam for the production of ammonia. This is necessary where nitric acid or nitrates are to be formed, but cyanamid itself has a value as a fertilizer material. This process has been worked commercially in Germany, producing about one-third of the German requirements during the recent war. It has also been worked successfuly in other countries, and the only commercial plant for fixation of nitrogen on the American Continent used this process. This plant at Niagara Falls has been in operation for a number of years, producing cyanamid daily for agricultural purposes. The advantge of this process is that it gives a product which is salable as a fertilizer material or convertible into materials which may be used for fertilizers. The disadvantages are that it involves a high consumption of power and the cost of the finished product is comparatively high.[1] In addition the product is very disagreeable to handle because of the irritation to the mucous membranes when the dust is breathed by animals or men working with it.

HABER PROCESS.

The Haber process is based upon the direct combination of nitrogen and hydrogen in the elemental form to produce ammonia. The process has to be carried out at a pressure of 100 to 200 atmospheres and a comparatively high temperature, about 550° Centigrade. The process was first developed in Germany, and during the recent war it contributed at least one-third of the fixed nitrogen required by that country. In no other country has this process been worked commercially,[2] but a great deal of work has been done toward developing it. It has a number of advantages. The power required is small, the product—liquid ammonia—is readily available for oxidation, and the nitric acid obtained is convertible into fertilizer materials The raw materials—air, water, and coal—are available in large quantities. The disadvantages of the method involve the use of highly technical labor and the mechanical difficulties of carrying out the operations at pressures of 100 or more atmospheres.

Mr. MAYO. I will put that in the record also.

Mr. MORIN. What study have you made of processes for such fixation as applicable to nitrate plant No. 2?

Mr. MAYO. We have made quite a number of studies.

Mr. MORIN. Have they been satisfactory?

Mr. MAYO. Quite so.

Mr. MORIN. Many people and scientists who are working on this very problem are of the opinion that Plant No. 2 can not produce nitrogenous compounds at a price at which they can compete with similar compounds from other sources or made by other processes; what is your opinion?

Mr. MAYO. I will refer to two statements made by eminent authorities, one by Dr. N. Caro and one by Mr. Frank Washburn, president of the American Cyanamid Co. Dr. Caro is the originator of this cyanamid process.

The CHAIRMAN. He is in Germany, is he not?

Mr. MAYO. Yes, sir. We will submit these two authorities, Dr. Caro and Mr. Washburn.

(The statements referred to follow:)

"Dr. N. CARO. How far the German nitrogen industry will be able to cope with foreign competition, in view of high wages and high costs of combustibles, can not at present be predicted. Since the cost of coal, which in the future is sure to be one of the most important items of expense, can hardly decrease, the lime-nitrogen industry, on account of its unusually small consumption of coke, will be in a very favorable situation. This will be particularly true when the construction market sinks to some halfway normal level, so that the capital cost of water-power developments will be more reasonable. * * *

"Far more dangerous (than the competition of Chilean nitrate) appears to be the possibility of competition with artificially fixed nitrogenous fertilizers produced in foreign countries.

"The largest of these (foreign lime nitrogen) plants is located in the United States, in Alabama. Its situation is most excellent.

"It is connected with the ocean by means of the Tennessee River, which has been made navigable. It is situated at a source of almost constant water power, amounting to 400,000 horsepower, and is right in the midst of a locality where all the raw materials of the lime-nitrogen (cyanamid) industry are present in the highest purity and at the very lowest prices. * * *

"Near by are the inexhaustible deposits of high per cent phosphate rock. The possibility therefore exists of * * * producing cheaply * * * ammonium phosphate containing roughly 45 per cent of water-soluble phosphoric acid and 20 per cent nitrogen."

"Mr. WASHBURN. My anticipation is that the establishment of the nitrogen industry, as it can be established with what I believe and what I believe would appeal to those who study the subject is the proper and legitimate Government cooperation, will give the farmer his fertilizer for one-half of what he would otherwise pay for it."

The CHAIRMAN. Where can Dr. Caro be reached at this time?

Mr. MAYO. I could not say. I expect in Germany.

The CHAIRMAN. He was identified, I recall, with a German company.

Mr. MAYO. Yes, sir.

The CHAIRMAN. I think he was at the head of those companies.

Mr. MAYO. I believe so.

The CHAIRMAN. We would have to go over to Germany to get him.

Mr. MORAN. From your study and knowledge, is Mr. Ford able to so operate plant No. 2 for the agreed period of 100 years that his produce—ammonium nitrate or other fertilizer compounds—can successfully compete with these other sources?

Mr. MAYO. I am of the opinion he can.

Mr. MORIN. Ammonium nitrate is, as I understand it, only one of the ingredients necessary to the making of a complete fertilizer such as agriculture can use; is this understanding correct?

Mr. MAYO. Yes, sir.

Mr. MORIN. In the form produced at nitrate plant No. 2 it is not fertilizer, but is a fertilizer compound; is not that true?

Mr. MAYO. He intends to produce a complete fertilizer.

Mr. MORIN. He intends to produce a complete fertilizer?

Mr. MAYO. Yes, sir.

Mr. MORIN. Would it be sold in this form to the farmer?

Mr. MAYO. Yes, sir.

Mr. MORIN. Could the farmer use it in this form without the addition of the other essential ingredients?

Mr. MAYO. He will be able to use the completed product as it will be furnished from that plant.

Mr. MORIN. As it will be furnished to him?

Mr. MAYO. Yes, sir.

Mr. MORIN. It will not be necessary, then, for the farmer to mix it with the other ingredients in order to market this product through the fertilizer mixers now existing?

Mr. MAYO. Not further than perhaps mixing it with dry earth or sand or something he has right at hand.

Mr. MORIN. If Mr. Ford plans the making of a complete fertilizer, does Mr. Ford's 8 per cent profit mean that the farmer will get his complete fertilizer at 8 per cent above cost?

Mr. MAYO. Yes, sir.

Mr. MORIN. And his 8 per cent is not limited to the ingredients of ammonium nitrate?

Mr. MAYO. It is limited to everything that goes into the cost of production.

Mr. MORIN. Complete.

Mr. MAYO. Yes, sir.

[1] The cost depends to a large extent upon the cost of power. (W. B. M.)

[2] Since the war a small plant using a modification of the Haber process has been operated at Syracuse, N. Y. A large plant employing this process recently blew up at Oppau, Germany, with great loss of life. (W. B. M.)

Mr. MORIN. If found by Mr. Ford after the starting of operations that he can not produce ammonium nitrate in competition with the wholesale market price of the same material from other sources, do you understand that his agreement binds him to continue the operation of the plant for nitrogen compounds at a loss?

Mr. MAYO. I do not think so, but of course he would have an opportunity to change the process. He would exhaust every effort with every process before he would quit.

Mr. MORIN. But it would not bind him to continue?

Mr. MAYO. I hardly think so. However, I would consider he was bound to keep the plant there in readiness.

Mr. MORIN. He has stated to Secretary Weeks that he would not run the plant at a loss.

Mr. MAYO. I think he meant he could not.

Mr. GREENE. I do not know whether the last question brought out just exactly what I want to know or not. If this contract holds for 100 years, of course, it is reasonable to expect that constant experimentation and research work will develop, very likely, new discoveries in chemistry and chemical combinations used in fertilizer.

Mr. MAYO. Yes, sir.

Mr. GREENE. And they will bring with them, of course, new processes, mechanical and otherwise, so that there is always the possibility that the present idea of fixation of nitrates will be superseded.

Mr. MAYO. Yes, sir.

Mr. GREENE. And that this particular plant with its present equipment may be a side issue within a quarter of a century.

Mr. MAYO. Yes, sir.

Mr. GREENE. Does the contract proposed by Mr. Ford contemplate his following all these new experimentations and developments in the chemistry of fertilizers, so that he may continuously keep abreast of what is being done in the world?

Mr. MAYO. Yes, sir.

Mr. GREENE. And he obligates himself to do that?

Mr. MAYO. I would say so.

Mr. GREENE. If the method and practice presently followed or if other processes or agencies or conditions or influences intervene to sidetrack the present methods or some later method, he will still develop fertilizer for the farmers there.

Mr. MAYO. That is his intention.

Mr. GREENE. If it is possible that the fixation of nitrates—because I suppose the chemistry of the soil will not change no matter what man does about his agencies—if the development of the fixation of nitrates goes to such a point that it becomes a more or less everyday neighborhood affair, commercially, with no longer any particular incentive for the Government or a great industry to concentrate on it, so that the present objective of this proposition was lost, would Mr. Ford still continue to manufacture fertilizers there?

Mr. MAYO. Not unless it could be done profitably. I think after he had evidenced he had exhausted every effort known to the state of the art to produce it at a profit, if it was not in the woods, so to speak, I do not think he would be obligated to continue.

Mr. GREENE. Somebody outside may be producing it at a profit.

Mr. MAYO. If they could there is every reason to believe that he could.

Mr. GREENE. Exactly; but the question was raised several times as to whether those conditions not within his control and so on, which are his outlets from the fulfillment of this nitrate part of the contract, would include such a thing as outside competition; in other words, if he should be bested by outside competition and in a state where he could not produce as economically as other people in the business could, would that be his legitimate and altogether valid reason for discontinuing?

Mr. MAYO. The only valid reason for discontinuing would be that he had proved by every possible effort that it was an absolute impossibility to make the product there with a profit.

Mr. GREENE. That would have to be both a physical and a moral proposition.

Mr. MAYO. Yes, sir.

Mr. GREENE. And yet, of course, the inducement in this contract, as it has been put by some of our brethren, is that Mr. Ford will produce fertilizer there so cheaply that the outside world will not raise the price of it. If that condition to this contract fails, what inducement is there for the Government to do it in behalf of the people. Mr. Ford is left with no obligation to continue the fertilizer part of the contract and has got a very generous water power on hand to sell.

Mr. MAYO. He is paying the lease price for it. It is reasonable to suppose that after starting in the production of fertilizer for any length of time, he would not discontinue unless he had exhausted every effort.

Mr. GREENE. My questions are not meant to prove any anticipated thoughts on my own part at all.

Mr. MAYO. I understand.

Mr. GREENE. I am just trying to see how nearly our minds meet. I am assuming that Mr. Ford will be governed throughout as a reasonable man, and that all we can expect of him is to do as reasonable men would do. This is not necessarily an antagonistic question, but the question does come, after all: If the inducement, the one which is so much urged upon us, is the certainty that the farmer will have through this means a source of supply of fertilizer that will maintain by competition a stable market price that is reasonable, if Mr. Ford at any time sees the necessity for abandoning such a competitive interest in fertilizers, then, of course, the market goes against the farmer if the people on the outside can bring that about.

Mr. MAYO. I do not see how there is any chance for him to continue to carry out the moral obligation of the contract and discontinue. He is entering into this in good faith.

Mr. GREENE. I have no doubt of it.

Mr. MAYO. And he will not quit, because there is more or less of hardship in trying to meet competition. The only reason for him to discontinue would be his actual inability to manufacture at a profit.

Mr. GREENE. Yes; and that is the very phase, you know, that proves the stumblingblock, as to what would be a legitimate excuse for his inability, the physical conditions attending the plant, or failure to bring those physical conditions up to a point where they met outside competition.

Mr. MAYO. Every authority that knows anything about that particular business agrees and are a unit in the opinion that that plant is as favorably situated as any plant in the world to make fertilizers cheaply. Now, if that is a fact, it goes without saying that he will have the fundamental possibilities of making it cheaper than anybody else.

Mr. GREENE. Then, just to clear that, if you please, that is reckoned upon the present process.

Mr. MAYO. Yes, sir.

Mr. GREENE. Now, supposing, as I said, we develop new processes, it is expected he will follow those developments, too, and institute in his plant the changes that are necessary in order to follow them?

Mr. MAYO. Yes, sir.

Mr. GREENE. One more question, if you please: This 8 per cent profit which Mr. Ford limits himself to in the terms of his proposed contract is supposed to be 8 per cent profit on the price as laid down to the individual farmer?

Mr. MAYO. It does not matter, it seems to me, where you take it; whether it is at the door of the factory or to the farmer, it is 8 per cent on whatever the cost may be.

Mr. GREENE. Yes; and I only asked that because I thought, perhaps, that was not businesslike form, and it was brought out here once or twice, I believe, through previous witnesses, that possibly Mr. Ford might keep within the letter of this contract if he sold immediately his product to some middleman at 8 per cent; would that be within the terms of the spirit of the contract?

Mr. MAYO. I think not. His intention is to deliver it as near directly to the consumer as possible.

Mr. HULL. Mr. Mayo, following Mr. Greene's questions on the 8 per cent matter, is that 8 per cent on the turnover or 8 per cent on the money invested?

Mr. MAYO. Eight per cent on the cost of the annual production.

Mr. HULL. It would not be on the turnover, because that would really be a cost-plus scheme.

Mr. MAYO. On the annual production cost is the way we put it.

Mr. HULL. Now, Mr. Mayo, speaking of contract No. 2, it is apparent, I think, to us all what is intended in that contract. As I understand, you do not care to make any radical changes in that contract. However, I presume you would not object to making the contract more specific if we thought it was

advisable in order to protect the interests of the Government and the people; anything that would clear it up would be acceptable, would it not?

Mr. MAYO. I imagine, if we have not clearly stated our intent, the wording may be changed to clarify it.

Mr. HULL. Any reasonable changes in order to make it clearer.

Mr. MAYO. Yes.

Mr. HULL. There are some things in there which I think naturally would suggest themselves to anyone. I do not care to go into all the details because it would take quite a good deal of time.

Mr. MAYO. Mr. Ford has indicated he did not want to make any further changes, but if there is some change in the wording to clarify the meaning, he would accept it.

Mr. HULL. You estimate about $45,000,000 would be about the approximate sum the Government would have to invest in the proposition to make it a going concern for Mr. Ford. In that do you estimate the increased cost of the flowage rights there. I imagine, although I may be wrong, that there will be increased costs of the flowage rights the minute you begin buying them up. Have you thought of that?

Mr. MAYO. I did not quite get you.

Mr. HULL. Have you thought of the increased cost of the flowage rights when you go to buying them up. The minute the Government goes to buying anything of that kind up we found through our experience during the war that immediately the real estate we want increases in value very materially, without any reason at all except that it is the Government that is buying it.

Mr. MAYO. They did not find that so when they bought the flowage rights for Dam No. 2, did they?

Mr. HULL. If they did not, it was about the only case I know of during the war.

Mr. MAYO. My understanding is those lands were bought at a figure approximating the estimates.

Mr. HULL. They were.

NOTE.—The estimated cost of the lands and flowage rights at Dam No. 2 was $350,000 in 1916. (H. Doc. 1262, 64th Cong., 1st sess., p. 35.) The actual cost of acquiring 6,612.4 acres out of 7,212.4 acres has been $383,490 (averaging $58 per acre) and the War Department's estimate of the cost of acquiring the remaining 600 acres is $40,000, making a total amount for this item at Dam No. 2 of $423,490. (From record of Chief of Engineers: U. S. Engineer Office, Florence, Ala., statement of July 31, 1921.)

Mr. MAYO. Yes. I am led to believe we can buy those rights within the estimate we have suggested.

Mr. HULL. You know who the owners are?

Mr. MAYO. Many of them; yes, sir.

Mr. HULL. Of course, there is a great deal of emphasis placed by the public and the press and some of the committee on the fertilizer proposition, and that is very valuable, but to my own mind this contract is far more valuable to the Government in the fact that if we accept it we will always have an independent source of ammonium nitrate.

Mr. MAYO. Yes, sir.

Mr. HULL. Without the changing of the plant or anything of that sort, that supply would always be protected, would it not?

Mr. MAYO. Yes, sir.

Mr. HULL. There can be no doubt about that.

Mr. MAYO. No, sir.

Mr. HULL. You would not have the right, although, apparently, under the contract you have bought this property—although I might say that I believe you have simply bought the land of it because you would not have the absolute right of ownership there because you could not change that plant and destroy what we now have in plant No. 2, and that is, an independent source for the production of ammonium nitrate.

Mr. MAYO. Not unless we replaced it with something equally as good or better.

Mr. HULL. I do not know that I want to correct an expert and perhaps I may be wrong, and if I am I was misinformed, but you said ammonium nitrate was the ingredient that went into fertilizer; is it not ammonium sulphate?

Mr. MAYO. Ammonium nitrate can be used. It is not usually used in that form.

Mr. HULL. It is not a success as a fertilizer?

Mr. MAYO. I would not say it could not be, but it is not now.

Mr. HULL. It may be that you may find some way of doing that. As a matter of fact, right on that point, this plant produces to-day ammonium nitrate.

Mr. MAYO. Yes, sir.

Mr. HULL. To produce ammonium sulphate, which you will have to produce, I think, if I am correctly informed, you would have to spend about one million, or two, or three million dollars; is not that true?

Mr. MAYO. We might, if we went into ammonium sulphate.

Mr. HULL. Of course, that money you spend yourself?

Mr. MAYO. Yes, sir.

Mr. HULL. That is a part of your proposition, and you would keep the plant, at all times, so that in case we needed it at any time for war purposes we could convert it right back into an ammonium nitrate plant.

Mr. MAYO. Yes, sir; or perhaps if the need of the Government changed it might be changed to make some substitute.

Mr. HULL. We understand that, and that would be all right.

Mr. MAYO. To all intents and purposes it would be kept ready for them as the contract states.

Mr. HULL. Of course, you will turn over your personnel and all that.

Mr. MAYO. Certainly.

Mr. HULL. Like Mr. McKenzie, I am a little in doubt as to the purchase of this Gorgas plant, and I can not see just exactly why that is necessary, and I imagine it is going to be a very hard nut for the committee to crack. As I understand it, you say you want it to duplicate the power by steam. That power is practically duplicated in plant No. 2 and the Gorgas plant is some 70 or 80 miles away, and would not be necessary to the proposition, so far as I can see.

Mr. MAYO. It is more beneficial, as we look at it, than the one located at plant No. 2.

Mr. HULL. It is?

Mr. MAYO. Because it is at the coal mines, really, and it does not necessitate transportation of the coal.

Mr. HULL. There is a new element then. It is so near the coal mines that therefore you think it would be much cheaper?

Mr. MAYO. Yes, sir; you can make your power cheaper and it increases our primary power that much.

Mr. HULL. In your 8 per cent profit on what you sell the farmer—and you say you are going to sell it direct to the farmer and not to any middleman or corporation to profiteer on the farmer; is not that true?

Mr. MAYO. The hope is to hand it to the farm organizations and let them distribute it themselves.

Mr. HULL. Now, how about the salaries of these men engaged in that work; that would have to be figured in?

Mr. MAYO. Certainly.

Mr. HULL. Is there any protection against excessive salaries?

Mr. MAYO. Nothing but good faith, I guess.

Mr. HULL. Would it not be a pretty good plan to suggest some salary list there?

Mr. MAYO. I think not.

Mr. HULL. You could put in men at $50,000 and the farmers would have to pay those salaries.

Mr. MAYO. That is very true, but I do not think we would stand very well with the farmers if we started that sort of tactics.

Mr. HULL. I understand that, Mr. Mayo, and I would not have the slightest doubt if this contract was to be carried out by the present personnel of the Ford company; but that is not the proposition. You realize we are making a contract for 100 years, and at the least it will be three years before you start and probably from 15 to 18 years, as you suggest, and in that time many things may change, and it might be over in the hands of a corporation, and our dealings with corporations are not such as to be as satisfactory sometimes as when we are dealing with persons.

Mr. MAYO. We hope to start within a year.

Mr. HULL. Producing fertilizer?

Mr. MAYO. Yes, sir.

Mr. HULL. I am glad to hear that. I did not know you figured you could do that. You would have to start, then, with your steam power.

Mr. MAYO. Yes, sir.

Mr. HULL. You hope to start right away with steam power manufacturing the fertilizer and selling it to the farmer?
Mr. MAYO. Yes, sir.
Mr. HULL. What do you estimate the cost of ammonium sulphate from this plant would be at the present time under present conditions?
Mr. MAYO. We have not attempted to find out what the cost would be under present conditions.
Mr. HULL. You have not?
Mr. MAYO. No, sir; we have several processes that we have been at work on for the last six months, and we still do not know which one we will finally adopt.
Mr. HULL. Under this contract you also take plant No. 1.
Mr. MAYO. Yes, sir.
Mr. HULL. What do you intend to do with that?
Mr. MAYO. Use it for manufacturing purposes.
Mr. HULL. For manufacturing fertilizer?
Mr. MAYO. No, sir.
Mr. HULL. For manufacturing nitrates?
Mr. MAYO. No, sir; manufacturing parts for our automobile business.
Mr. HULL. You intend to manufacture parts for the automobile over there?
Mr. MAYO. Yes, sir; raw materials.
Mr. HULL. That would, of course, contemplate changing that plant entirely from a nitrate plant.
Mr. MAYO. Yes, sir.
Mr. HULL. You do not contemplate, however, changing No. 2 in that way.
Mr. MAYO. No, sir.
Mr. HULL. You have not any doubt but what you can manufacture a cheap fertilizer at plant No. 2 at the present time?
Mr. MAYO. We have no doubt at all; no, sir.
Mr. HULL. How is the Government to be protected against destruction by fire or by an explosion of plant No. 2? You would expect to insure against that?
Mr. MAYO. Yes, sir.
Mr. HULL. Who would have to pay for that insurance?
Mr. MAYO. Mr. Ford would.
Mr. HULL. That would be charged against the operation and against the project?
Mr. MAYO. Yes, sir.
Mr. JAMES. Mr. Mayo, the last proposition of Mr. Ford was drawn in the office of the Judge Advocate General of the War Department, was it not?
Mr. MAYO. Yes, sir.
Mr. JAMES. Were you present?
Mr. MAYO. Yes, sir.
Mr. JAMES. When the Judge Advocate General was before the committee the other day the matter concerning the cost of the flowage rights came up, and he stated that Mr. Ford believed the Government could acquire those cheaper than anybody else, and there was not any doubt in his mind but that Mr. Ford intended to reimburse the Government for those expenditures, and that when you appeared before the committee you would agree with his view concerning that matter. What have you to say about that?
Mr. MAYO. I differ from his opinion; I do not think Mr. Ford intends to have that charged up against the project at all.
Mr. JAMES. It makes quite a difference to the Government whether it has to pay for them or whether Mr. Ford is going to pay for them.
Mr. MAYO. I have stated before that Mr. Ford thought that the cost of those flowage rights should be charged up to navigation.
Mr. JAMES. What plan has Mr. Ford for giving the fertilizer to the farmer?
Mr. MAYO. No definite plan has been worked out.
Mr. JAMES. You think he intends to work it out through some agricultural society?
Mr. MAYO. That is the intention; yes, sir.
Mr. JAMES. If that plan falls through, and he has to sell to others to distribute, and they in turn distribute to the retailers, would that 8 per cent profit include all the different turnovers, or would Mr. Ford's profit be 8 per cent, and the distributors and the retailers get a percentage?
Mr. MAYO. If it passes out of his hands before it reaches the consumer he would do everything he could to hold the price within reasonable limits. The

object has always been, however, to get the fertilizer delivered direct to the farmer without passing through the hands of third parties.
Mr. JAMES. How much capital do you think would be sufficient—that is, the lowest amount Mr. Ford would have to put into the company to buy that property from the Government and to carry out the different propositions he intends to carry on?
Mr. MAYO. My impression is that within a few years he will probably invest twenty-five or thirty million dollars.
Mr. KEARNS. Following the line of questions that Mr. Hull asked you, the last question he asked you was in reference to the matter as to whether Mr. Ford would pay the cost of insurance against fire and explosions. Under this contract you say he agrees to pay all the expenses of the upkeep of the machinery and plant. As I remember it, there was nothing stated about that in the contract. Does Mr. Ford agree to pay all the expense of the upkeep of the machinery and plant?
Mr. MAYO. According to the contract, the property is sold to Mr. Ford, and it is up to him to keep it intact, in working order at all times.
Mr. KEARNS. It is leased to him, and not sold to him; is it not?
Mr. MAYO. Oh, no; it is sold.
Mr. KEARNS. Do you know how much nitrate is used in the manufacture of fertilizer in the United States to-day?
Mr. MAYO. Somewhere around 200,000 tons of nitrogen.
Mr. KEARNS. Then Mr. Ford agrees to manufacture 110,000 tons—that is, to manufacture more than half of what is used in the United States?
Mr. MAYO. No, sir; there are 200,000 tons of nitrogen used.
Mr. KEARNS. He agrees to produce 110,000 tons of ammonium nitrate. How much of that is used in the fertilizer which is used in the United States to-day?
Mr. MAYO. I do not know of any ammonium nitrates used in fertilizers now.
Mr. KEARNS. What do you mean in the contract when you say you will run to the full capacity, and that the capacity now is equal to 110,000 tons of ammonium nitrate per annum?
Mr. MAYO. Run it at a capacity the equivalent of 110,000 tons of ammonium nitrate.
Mr. KEARNS. That is used in the manufacture of fertilizers, is it not?
Mr. MAYO. They have not up to date used ammonium nitrates in fertilizers.
Mr. KEARNS. Do they not convert it into some other product?
Mr. MAYO. They can make it into sulphate of ammonia. So far as the capacity of the plant is concerned, it was built to make ammonium nitrate, so that the capacity at which we agreed to run it is the capacity stated, as 110,000 tons annually.
Mr. KEARNS. I think you have stated you intend to manufacture the finished fertilizer, the finished product?
Mr. MAYO. Yes, sir.
Mr. KEARNS. Ready for the farmer to use on his crops?
Mr. MAYO. Yes, sir.
Mr. KEARNS. What percentage of the fertilizer used in the United States would you propose to manufacture?
Mr. MAYO. That is difficult to say, but I imagine it will be about 20 per cent.
Mr. KEARNS. Would the production of the 20 per cent of the fertilizer produced in the United States enable you to control the price of the fertilizer?
Mr. MAYO. We would only be able to control what we made ourselves.
Mr. KEARNS. What effect would that have on the other 80 per cent?
Mr. MAYO. It would have its influence on the 80 per cent, surely.
Mr. KEARNS. Would Mr. Ford have any objection to clarifying this contract to make it appear clear that he is going to manufacture fertilizer, and not only one of the component parts?
Mr. MAYO. I do not know that he would object.
Mr. MILLER. Mr. Mayo, you are the personal representative of Mr. Henry Ford, are you?
Mr. MAYO. Yes, sir.
Mr. MILLER. As I understand it, it is a principle of law that when there are any ambiguous terms in connection with a contract oral testimony may be received by the court in the interpretation of the ambiguous terms. As I understand it, you are giving your testimony with a view of being so bound?
Mr. MAYO. Yes, sir.
Mr. MILLER. Now, I have before me the offer of Mr. Ford. I anticipate that it is your idea if this proposition is accepted by the Congress of the United

States that then Mr. Ford's personal identity with this enterprise ceases and the company to be organized will continue.

Mr. MAYO. Mr. Ford has not definitely determined whether he will run it individually or as a company—it would be a corporate organization in either case, controlled, under the contract, by Mr. Ford or his estate.

Mr. MILLER. I read this language in the offer, "For the purpose of carrying out the terms of this agreement the undersigned will form a corporation (hereinafter referred to as the company), to be controlled by the undersigned, which company will immediately enter into and execute all necessary or appropriate instruments of contracts to effectuate this agreement." That is in the first paragraph of the agreement. He then binds himself to organize this company, as I understand his offer. Am I right about that?

Mr. MAYO. I think you are right; yes, sir.

Mr. MILLER. Then we lose Mr. Ford's personal identity and we are dealing with the company specified in his offer, or the corporation as he used the word. It says, "the undersigned will form a corporation." He will organize this corporation, and thereafter Mr. Ford's personal identity will be lost, and the United States Government will deal with this corporate body. Now, is it your idea to organize this corporation under the laws of the State of Alabama?

Mr. MAYO. I do not know, sir.

Mr. MILLER. Do you know that in all States of the American Union there is a certain limitation to the life of a corporation?

Mr. MAYO. Yes, sir.

Mr. MILLER. That in some States it is 25 years, in some States 50 years; there are various periods. Say that the life of a corporation in a State where it was organized is 50 years. Let us assume that. At the end of that period your corporate rights will expire by operation of law. That will happen as a matter of law. Then the remainder of your lease will have to be carried out by some corporation not in being at the present time.

Mr. MAYO. I suppose it could be renewed.

Mr. MILLER. I know of no State, I will say by way of information, where there is any provision for the renewal of the life of a corporation. The rights of a corporation expire by operation of law at the end of the limitation. Then a new corporation may be formed to take over the properties and assets and liabilities of the old corporation; but I know of no State in the American Union that provides for the perpetuation of the identical corporate rights. As a matter of fact, Mr. Ford is binding himself for the period of the life of a corporation and a period of 50 years beyond. That is what I understand from this offer.

Mr. MAYO. Apparently, but this agreement also binds the successors or assigns of the company. (See sec. 19.)

Mr. MILLER. That becomes a matter of law, whether that can be legally done. I want to refer to another angle of your contract, or the proposal of Mr. Ford. By the way, I see Mr. Ford has signed this at Dearborn, Mich.

Mr. MAYO. Yes, sir.

Mr. MILLER. He is a citizen of the State of Michigan, I believe.

Mr. MAYO. Yes, sir.

Mr. MILLER. He binds his estate, I notice in the closing clause of this agreement, and at the end of one year after Mr. Ford's death all claims against the estate will have to be audited and presented to his administrator or executor under the laws of the State of Michigan. I believe that is right, is it not?

Mr. MAYO. I imagine so.

Mr. MILLER. So far as any liability of the estate after one year following his death is concerned the estate can not be bound in any way?

Mr. MAYO. I am not prepared to say anything about that.

Mr. MILLER. I was asking if those things were taken into consideration, from the legal aspect of jeopardizing the estate of Mr. Ford. I had supposed they were.

Mr. MAYO. I think so.

Mr. MILLER. I will ask you to take the tender of Mr. Ford, dated at Dearborn, Mich., on the 25th day of January, 1922, and point out the section in there where Mr. Ford agrees to make a commercial fertilizer and place the same on the market and keep it on the market at 8 per cent profit for the next hundred years. As near as I can get at it, that is in section 15.

Mr. MAYO. In section 14, I would say.

Mr. MILLER. Let us analyze that very briefly: "The company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds—said capacity being equal to approximately 100,000 tons of ammonium nitrate per annum—throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control. And it further agrees to continue the work of research. He agrees to manufacture ammonium nitrate for 100 years. I am inquiring in what other place in Mr. Ford's tender he agrees to manufacture a commercial fertilizer. He agrees by the provisions of that section to manufacture one of the ingredients of the fertilizer.

Mr. MAYO. He says, "In the production of nitrogen and other fertilizer compounds."

Mr. MILLER. I am wondering if Mr. Ford would have any objection to writing language in there something like this, "In order that a commercial fertilizer may be produced throughout the lifetime of this lease, Mr. Ford and his heirs and assigns and the company mentioned in the agreement hereby agree to manufacture and place upon the market a commercial fertilizer at 8 per cent profit throughout the lifetime of this lease."

Mr. MAYO. I could not answer that.

Mr. MILLER. That is what I am interested in. There are two angles to the tender, the fertilizer angle and the hydroelectric-power angle. Let us take the fertilizer angle. I am in sympathy with that, but I want to know where Mr. Ford agrees during the lifetime of this lease to supply the country with a complete fertilizer.

Mr. MAYO. That has always been his intention.

Mr. MILLER. That may be; but all this proposition is reduced to this written offer, and if the Government or the people are to rely upon anything, it must be upon this offer I hold in my hand. I am asking you if Mr. Ford would have any objection to putting a clause into this tender by which he agrees upon the death of himself, his heirs, and assigns, that the company which he shall organize and its successors shall manufacture and place upon the market during the lifetime of this lease a commercial fertilizer at not more than 8 per cent profit?

Mr. MAYO. I do not know that I could say that without talking it over with Mr. Ford.

Mr. MILLER. Then the commercial-fertilizer angle is indefinite as to what Mr. Ford or his company is going to do in the production of fertilizer.

Mr. MAYO. It states pretty plainly that the company agrees to operate the nitrate plant in the production of fertilizer compounds to the capacity of 110,000 tons of ammonium nitrate per annum.

Mr. MILLER. There is no place where I can find that he agrees to furnish the other ingredients of the fertilizer and put it upon the market.

Mr. MAYO. That is not stated clearly.

Mr. MILLER. Let us get at the principal thing you are after. To be perfectly frank about it, that is the hydroelectric power, is it not?

Mr. MAYO. I have not said so.

Mr. MILLER. That is the principle value of your contract, is it not?

Mr. MAYO. I do not think it is.

Mr. MILLER. What horsepower will be generated at Dam No. 2? There will be a primary horsepower of about 100,000, will there not?

Mr. MAYO. About 100,000 primary horsepower.

Mr. MILLER. And how much secondary power?

Mr. MAYO. Around 450,000 secondary horsepower.

Mr. MILLER. At Dam No. 2, or both dams?

Mr. MAYO. Dam No. 2.

Mr. MILLER. That would be 100,000 primary and 450,000 secondary horsepower? At Dam No. 3 you would produce probably 80,000 primary horsepower?

Mr. MAYO. About 40,000.

Mr. MILLER. Then, we have 140,000 primary hosepower on the two dams?

Mr. MAYO. Yes, sir; from the run of the river.

Mr. MILLER. Now, the secondary horsepower at Dam No. 2 is 450,000. What will it be at Dam No. 3?

Mr. MAYO. Two hundred thousand.

Mr. MILLER. Then, we have 140,000 primary horsepower and we have 650,000 secondary horsepower?

Mr. MAYO. Yes, sir.

Mr. MILLER. What is the value of horsepower in that locality? What have you figured it in making this offer?

Mr. MAYO. I do not know what the fair value of it is in that locality.

Mr. MILLER. I do not want to appear antagonistic; I am trying to get the facts. What have you used as a basis in making this offer? What do you base the value of the primary horsepower generated at this hydroelectric plant on, in making this offer?

Mr. MAYO. It all depends upon the success of the working out of the project.

Mr. MILLER. You have based it on an enormous income from that, have you not? That is, from the hydroelectric energy that would be produced there?

Mr. MAYO. This is to be taken as a whole, together with the nitrate plants and the other manufactures.

Mr. MILLER. Let us follow this a little further. There will be 140,000 primary horsepower produced at the two dams.

Mr. MAYO. Yes, sir.

Mr. MILLER. The Warrior plant produces approximately 30,000?

Mr. MAYO. Yes, sir.

Mr. MILLER. That is, 30,000 kilowatts?

Mr. MAYO. Yes.

Mr. MILLER. A kilowatt is more than a horsepower?

Mr. MAYO. Yes.

Mr. MILLER. About one-eighth more?

Mr. MAYO. About one-third more; a kilowatt is equal to about one and one-third horsepower.

Mr. MILLER. Then, you will produce over 30,000 horsepower at the Warrior plant?

Mr. MAYO. Yes.

Mr. MILLER. Then, the steam plant at nitrate plant No. 2 is capable of producing 60,000 kilowatts?

Mr. MAYO. Yes.

Mr. MILLER. That would be in excess of 60,000 horsepower?

Mr. MAYO. Yes.

Mr. MILLER. As I figure it up here, there would be about 230,000 primary horsepower in all those units which you are proposing to purchase or lease?

Mr. MAYO. Yes, sir; at least that much.

Mr. MILLER. Suppose you would sell it at $18 a year per horsepower. That is a very cheap rate. If you did that your income from that would be approximately $2,160,000 a year from the primary horsepower. That is at the cheap rate of $18 per year per horsepower. I have also calculated on your secondary horsepower. According to your figures, you would have 650,000 horsepower. I had calculated on 400,000. If you were to sell that for $8 per horsepower per year, which is a small rate, your income would be $3,200,000, according to my calculation. So that if you sell your primary horsepower at $18 per horsepower per year, and sell your secondary horsepower at $8 per horsepower per year, your income would be approximately $8,160,000 from the sale of your horsepower each year. So, it occurs to me that the horsepower is what you are after.

Mr. MAYO. We are after cheap power, certainly.

Mr. MILLER. You are generating there 230,000 primary horsepower, and 650,000 secondary horsepower, which is an enormous water power, is it not?

Mr. MAYO. Yes, sir.

Mr. MILLER. If you sell your primary horsepower at $18 and your secondary horsepower at $8, the company will have an income of over $8,000,000 a year.

Mr. MAYO. I have not checked up your figures, but you are evidently wrong.

Mr. MILLER. I understand you have based this offer of Mr. Ford's on certain calculations. How far am I away from those calculations?

Mr. MAYO. Mr. Ford intends to use that power himself. It is not a question of selling the power.

Mr. MILLER. If he uses the power himself it will certainly yield him that much money, will it not?

Mr. MAYO. No; you have assumed a 100 per cent load factor.

Mr. MILLER. Would he use the power himself at a less rate than he can sell it for?

Mr. MAYO. Certainly; but he could not use every kilowatt-hour that he generates.

Mr. MILLER. You mean Mr. Ford is undertaking to supply himself with horsepower at less than the commercial rate—is that the idea?

Mr. MAYO. I do not quite get your question.

Mr. MILLER. If he is planning to purchase electric energy himself at less than the commercial rates; that is the question?

Mr. MAYO. Certainly.

Mr. MILLER. That would give him an extraordinary advantage in this line, would it not?

Mr. MAYO. We hope so; there could be no promise of cheap fertilizer otherwise.

Mr. MILLER. The Government in advancing $50,000,000 to complete these two dams would have to pay certain interest on that amount. Let us start on that proposition and see where the Government is coming out. Suppose we pay a rate of interest equal to what we are paying on our present Liberty loans, 4¼ per cent. On the $50,000,000 at 4¼ per cent interest, the amount of interest the Government would have to pay would be $2,225,000 a year to supply the $50,000,000 to complete the dams. That is right, is it not?

Mr. MAYO. I take it for granted that you are correct.

Mr. MILLER. Taking it on the basis of $45,000,000, for which you say the dams can be completed, suppose the Government issues bonds bearing the same rate of interest that our Liberty loan bonds bear, the Government's annual interest charge would be $1,912,500. That is the amount we would have to pay every year of the world for 100 years, until your plant amortizes itself. That is right, is it not?

Mr. MAYO. I think so, if your figures are correct.

Mr. MILLER. During that period you pay for the first six years $200,000 on Dam No. 2.

Mr. MAYO. Yes; $200,000 per year.

Mr. MILLER. And you pay $160,000 a year for three years on Dam No. 3?

Mr. MAYO. Yes; I believe that is correct.

Mr. MILLER. That makes $360,000 a year you pay because, the interest on your investment has not yet commenced. That will be an income to the Government of $360,000 a year, plus this $55,000 a year you pay for the maintenance of the dams. Does that commence on the signing of the contract or does it commence when the dams are in a position to generate power? I see that the agreement provides for the payment of $35,000 to maintain Dam No. 2?

Mr. MAYO. Yes, sir.

Mr. MILLER. And $20,000 a year to maintain Dam No. 3?

Mr. MAYO. Yes.

Mr. MILLER. Do those payments commence coincident with the signing of the contract, or do they commence when the dams are completed?

Mr. MAYO. When the dams are completed.

Mr. MILLER. The contract is silent on that.

Mr. MAYO. You can not expect us to pay for maintenance when the dams are not completed.

Mr. MILLER. On Dam No. 2, and for the first three years on Dam No. 3, you will have to pay $55,000 a year; is that right?

Mr. MAYO. There will be no maintenance on the dams till they are completed.

Mr. MILLER. If there is no maintenance on the dams all your company would have to pay would be $200,000 a year for six years on Dam No. 2 and $160,000 a year for three years on Dam No. 3, which makes a total of $360,000 a year.

Mr. MAYO. That is correct.

Mr. MILLER. As against that the Government has to pay out $2,225,000 a year in interest, figuring on the rate of interest at 4¼ per cent.

Mr. MAYO. I think you are correct. I am not sure.

Mr. MILLER. Let us take that from the Government angle. It is our duty, I take it, to watch out to see where the Government is coming out. Every year for 100 years the Government will have to pay an annual interest charge of $2,225,000, provided it can borrow this money at 4¼ per cent. That would be the interest on our bonds.

Mr. MAYO. We think you can borrow it for less.

Mr. MILLER. How much?

Mr. MAYO. At 4 per cent.

Mr. MILLER. We pay 4¼ per cent on our Liberty bonds, and we have had great difficulty in getting those to par. As I figure it, the Government can not get out on anything short of $2,225,000 for the annual interest charge for 100 years. At the end of that 100 years you are paying into an amortization fund $5,505 semiannually on dam No. 3, and $19,760 on dam No. 2, which, placed at 4 per cent interest, you figure will aggregate $49,000,000 at the end of your lease period. Those are your figures, are they not?

Mr. MAYO. I think so, approximately.

Mr. MILLER. Your annual outlay there, as far as the company is concerned, is $49,000 a year in your amortization fund. That is what you pay into the Government?

Mr. MAYO. That is about right, $46,746 to be exact.

Mr. MILLER. You will pay to the Government in addition $55,000 after the locks are completed, for the maintenance of the locks at the two dams, $35,000 at dam No. 2, and $20,000 at dam No. 3. That is right, is it not?

Mr. MAYO. For the maintenance of the locks and dams; yes, sir.

Mr. MILLER. You will be paying to the Government on the amortization fund $49,000, plus $55,000 for the care of your locks, and that is what the Government will get in order to offset its interest charge of $2,225,000 per annum. And to that must be added the rental you will pay?

Mr. MAYO. Yes, sir; and the income from the amortization fund.

Mr. MILLER. If you pay 4 per cent on the actual cost of building that dam, and we figure on a basis of $50,000,000 as the cost of building the dams, the interest paid to the United States Government after the end of the 6-year period on dam No. 2 and the end of the 3-year period on dam No. 3 will be $2,000,000 a year.

Mr. MAYO. I do not think your premises are correct.

Mr. MILLER. Figuring on a basis of $50,000,000 to build the dams?

Mr. MAYO. We do not think it will cost that much.

Mr. MILLER. How much?

Mr. MAYO. $40,000,000 or less.

Mr. MILLER. That would mean $1,600,000 a year, which is the interest your company would pay?

Mr. MAYO. Yes.

Mr. MILLER. And your company is charged with paying to the United States Government $1,600,000, which you estimate is the rental?

Mr. MAYO. Yes, sir.

Mr. MILLER. You will pay $55,000 for the maintenance of the locks on the dams. It is also to pay into the amortization fund $49,000 a year. Those are all the charges, are they not?

Mr. MAYO. I think so.

Mr. MILLER. What will that total be?

Mr. MAYO. It is $1,704,000, on the basis you have taken.

Mr. MILLER. That is what it will cost you folks to operate your company. That is what your expenses will be. Figuring on the water power you will generate at the prices I have given, $18 a year per horsepower on primary horsepower and $8 a year on secondary horsepower, and figuring on the basis of the capacity of these generating plants, the Warrior plant, the nitrate steam plant, nitrate plant No. 2, and the two dams, they will generate collectively 270,000 horsepower, on which the income of your company will be $8,760,000, approximately, and your expenses will be $1,704,000. These are the figures as I make them out in connection with this hydroelectric power proposition.

Mr. MAYO. I think your premises are all wrong. The cost of both the waterpower and the steam power will go into the cost of the product, with such a combination.

Mr. MILLER. You will certainly add some sum for the waterpower product, will you not?

Mr. MAYO. Not much.

Mr. MILLER. You do not mean that you are going to generate power down there without keeping track of how much power you generate and where it is going and what it is going to cost for its distribution?

Mr. MAYO. Certainly, we will keep the cost.

Mr. MILLER. And does not Mr. Ford keep accurate accounts in his factory?

Mr. MAYO. Certainly.

Mr. MILLER. I am sure he does, and I am therefore surprised to find that on this gigantic enterprise he will run it on a different principle from the principle on which he runs his other very successful enterprises.

Mr. MAYO. He will not be running it on a different principle. He will figure what the power is costing him into the cost of his product on the basis of the actual cost. But you are figuring on what the power is costing on the basis of what the horsepower sold by a utility company would be, and that is not the way he figures it in his cost.

Mr. MILLER. Suppose Mr. Ford did not turn a wheel at his own enterprise down there and sold his horsepower output in all these four plants, and sold it at the price I have indicated, which I have said is a low price. On that basis

I find, by my computation, that your company would have a profit of $4,370,000 a year, and not put in a dollar except the $5,000,000.

Mr. MAYO. I am coming back at you with your statement, and I say that your premises and your calculations are all wrong. He wants to make his power cheap. He is not at all interested in "what the traffic will bear."

Mr. MILLER. I would like to get that right. I take your word for the primary horsepower.

Mr. MAYO. The quantities are correct.

Mr. MILLER. I have taken the price at my estimates, and I am inquiring where my premise is wrong.

Mr. MAYO. It is wrong in that he will take the horsepower at its cost. Your estimate of cost is wrong and your estimate of selling price is wrong.

Mr. MILLER. Then I revert to the question I asked you before. He is supplying his industries at a horsepower cost entirely below the salable value of horsepower?

Mr. MAYO. We hope it will be; yes, sir.

Mr. MILLER. Then the margin, of course, will be governed, so far as the sale is concerned, by the neighborhood price; is that not true?

Mr. MAYO. No, sir; the neighborhood price has nothing to do with our figures.

Mr. MILLER. That is an angle of it that I had not thought of. There are very substantial enterprises in northern Alabama, with considerable investments in water power, are there not?

Mr. MAYO. There is no great waterpower in that vicinity.

Mr. MILLER. The Alabama Power Co. have some hydroelectric power plants?

Mr. MAYO. Yes, sir; in central Alabama.

Mr. MILLER. They have quite a substantial investment there?

Mr. MAYO. I believe so.

Mr. MILLER. If Mr. Ford can develop power at much less than the Alabama Power Co. can do it, the company owning its own land, you would drive those people out of business, would you not?

Mr. MAYO. No, sir.

Mr. MILLER. Have you any idea of an amalgamation of these two companies?

Mr. MAYO. No, sir.

Mr. MILLER. I wish you would explain how that can be done.

Mr. MAYO. I am trying to explain that your premises are all wrong. You seem to be analyzing this subject from a public utility point of view, but that is not Mr. Ford's intention, to start a power company for the sale of power; that is not his intention at all.

Mr. MILLER. Then the proposition is that he will use this 270,000 horsepower all himself?

Mr. MAYO. That is his intention.

Mr. MILLER. Then he is supplying himself with a very cheap source of power.

Mr. MAYO. That is the hope.

Mr. MILLER. And the Government in order to supply him with that cheap source of power is doing it at an expense of over a million and three-quarters of dollars a year?

Mr. MAYO. I do not agree with you.

Mr. MILLER. Where am I wrong?

Mr. MAYO. You have taken the cost at $50,000,000.

Mr. MILLER. I take it at $45,000,000, your figures, and I will take the rate of interest on our Liberty bonds, 4¼ per cent.

Mr. MAYO. We think you can place it at 4 per cent.

Mr. MILLER. That makes a very small difference, about $125,000. Where am I wrong?

Mr. MAYO. You are wrong in regard to the cost.

Mr. MILLER. Then I go back to my first question, that the hydroelectric power is what Mr. Ford is after there, and not the fertilizer end of it at all.

Mr. MAYO. I will be glad to put a statement in the record in regard to that particular point.

WHAT MR. FORD PAYS FOR POWER.

[On the basis of the estimate of the Chief of Engineers, U. S. Army.]

The Chief of Engineers' estimate of the absolute primary power at Dam No. 2 is [1] 435,000,000 kilowatt hours, and at Dam No. 3 is 173,000,000 kilowatt hours,

[1] Letter of Gen. Beach, Aug. 15, 1921.

a total of 608,000,000 kilowatt hours annually, based upon the 21-year record of flow.

Since Mr. Ford's payments to the Government for power purposes total [2] $1,781,746 annually, he pays as rental for this primary power, on the foregoing basis, 2.9 mills per kilowatt hour, or $18.95 per horsepower year on a 100 per cent load factor basis.

This is more than twice the amount which the Aluminum Co. of America is said to pay for primary power at Niagara Falls. It is nearly twice the amount which the American Cyanamid Co. pays, as testified to by Mr. Washburn; [3] it is about 75 per cent of the minimum price at which power is retailed in the city of Chattanooga. For example, the Southern Ferro Alloys Co. pays a minimum of 4 mills per kilowatt hour, or about $26 per horsepower year for the power they use.

Mr. Ford pays for the power whether he uses it or not. No one has ever attained a 100 per cent load factor in the practical operation of any industrial plant.

If Mr. Ford does as well as the consumers of the power from the Keokuk Dam, he will have an average load factor of about 54 per cent,[4] and his absolute primary power on the above basis will cost him about 5.3 mills per kilowatt hour, or $34.61 per horsepower year for the primary power which he is able to use.

As for the secondary power, the southeastern power companies have declared that it has no commercial value. Be that as it may in their cases, the fact remains that the only reason that Mr. Ford has been able to make his offer is because he can use much of the secondary power and because he can find in the upper tributaries of the Tennessee River and elsewhere the storage that enables him at large expense to convert a large part of this secondary power into primary power.

Mr. MILLER. I want to learn all I can about this, Mr. Mayo. It strikes me this way: Is there anything in the taxation laws of Alabama by which a leasehold interest is taxed at a less rate than a title in fee?

Mr. MAYO. I do not know about that.

Mr. MILLER. Have you investigated the laws of Alabama in that regard?

Mr. MAYO. No.

Mr. MILLER. I am frank to say I do not know what the law is on that, and I have a letter on the way to the attorney general of Alabama to get a statement of the taxation laws that will be applied to Mr. Ford's enterprise. It occurs to me that that will be quite an item. How would this proposition strike you? Suppose the United States Government would allow Mr. Henry Ford's company to have nitrate plant No. 2 as a free occupying tenant during the lifetime of the lease for 100 years, not pay a cent for it, the only limitation upon it being that he will keep it in readiness for the production of ammonium nitrate as a matter of nitrate preparedness, the fee to remain in the Government, and he to obligate himself to occupy nitrate plant No. 2 in the production of fertilizer. Do you suppose that proposition would be entertained by Mr. Ford?

Mr. MAYO. No, sir; that would prevent him from changing nitrate plant No. 2.

Mr. MILLER. It would prevent him from changing to a different process?

Mr. MAYO. Yes.

Mr. MILLER. Suppose there should be a provision in the lease for the manufacture of ammonium nitrate by the cyanamid process at plant No. 2, or any process of manufacture they discover to be less expensive.

Mr. MAYO. He might want to make large investments of his own money in additions to the present plant.

Mr. MILLER. We would provide for that in the contract. He could invest whatever money he pleased.

Mr. MAYO. He would not want to invest it on the Government's property.

Mr. MILLER. What I am getting after is the maintenance of nitrate plant No. 2, in readiness to instantly meet a war necessity in connection with ammonium nitrate.

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[2] Mr. Ford pays annually: Interest, $1,680,000 (on a cost of $40,000,000); retirement fund, $46,746; maintenance, $55,000; total, $1,781,746.

[3] Hearings before House Committee on Agriculture, 64th Cong., 1st sess., on Agricultural appropriation bill, Feb. 9, 1916, p. 28.

[4] Supplement to Hearings before Subcommittee of House Committee on Appropriations on sundry civil appropriation bill for 1922, 66th Cong., 3d sess., Feb. 14, 1921, Table LXII, line 18, p. 56.

Mr. MAYO. You will guard yourself as well by selling it to him.

Mr. MILLER. Suppose we do not want to sell it, but want to keep the title to it and let him use it free of charge?

Mr. MAYO. I do not think he could afford to use it on that basis.

(Thereupon, at 4.30 o'clock, the committee adjourned, to meet to-morrow, Tuesday, February 14, 1922, at 10 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Tuesday, February 14, 1922.

The committee met at 10 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MR. WILLIAM B. MAYO, CHIEF ENGINEER OF THE FORD MOTOR CO., DETROIT, MICH.—Resumed.

Mr. MILLER. Mr. Mayo, I recasted my figures last night and I will ask you if you recasted yours and found wherein my figures were wrong yesterday?

Mr. MAYO. You speak with reference to the figures made as to the cost to the Government during the first few years?

Mr. MILLER. Yes.

Mr. MAYO. We have made up a little statement of the cost to the Government during the first six-year period, as we see it.

Mr. MILLER. You will recall that my figures yesterday were based on a cost of $50,000,000 for the dams and interest at the rate of 4½ per cent.

Mr. MAYO. Yes, sir.

Mr. MILLER. The same rate that most of our Liberty loan bonds bear.

Mr. MAYO. Yes, sir.

Mr. MILLER. Let me take your own figures, on the basis of $40,000,000 as the cost of the two dams, the completion of Dam No. 2 and the entire construction of Dam No. 3, with the money at 4 per cent.

Mr. MAYO. Yes, sir.

Mr. MILLER. That is the basis on which you are figuring on financing the proposition.

Mr. MAYO. We based our figures on $42,000,000; in fact, on $42,230,000.

Mr. MILLER. Your figures yesterday were $40,000,000.

Mr. MAYO. Yes, sir; with an outside estimate of $45,000,000.

Mr. MILLER. Now you have gone up $2,000,000.

Mr. MAYO. I am not going up. Our estimates which we handed in, as to what we thought the cost might be, are the exact figures, $42,230,000.

Mr. MILLER. $42,230,000?

Mr. MAYO. Yes; although we are of the opinion it can be done for still less, but inasmuch as we put in that figure we made up our statement here on that basis.

Mr. MILLER. My understanding yesterday was that you had based the cost of these two dams at $40,000,000.

Mr. MAYO. Yes, sir.

Mr. MILLER. So that I prepared my figures which I will go over with you on the basis of $40,000,000 for the dams.

Mr. MAYO. Yes.

Mr. MILLER. And my inquiry is to ascertain where the Government is getting off. Now, there are two dams—Dam No. 2 and Dam No. 3—and Dam No. 2 is partially constructed and Dam No. 3 is entirely to be constructed.

Mr. MAYO. Yes, sir.

Mr. MILLER. We will take up first Dam No. 2 and on the basis of $20,000,000 the annual charge for interest at 4 per cent would be $800,000 a year; is that correct?

Mr. MAYO. That is right; yes, sir.

Mr. MILLER. For the 2-year period, which it will take to construct the dam, the Government is out two years' interest at 8 per cent which is $1,600,000.

Mr. MAYO. It is out half of that.

Mr. MILLER. Half of it?

Mr. MAYO. Yes, sir.

Mr. MILLER. Well, we will figure on half of it, do you think both of these dams can be constructed in a year.

Mr. MAYO. No, sir.

Mr. MILLER. I did not think so either, but you said to cut that in half.

Mr. MAYO. I meant that. We would only take our money as we needed it for construction, which would require one-half of the amount of interest you mention.

Mr. MILLER. I am not talking about your side of it, I am talking about the Government's angle.

Mr. MAYO. I am too.

Mr. MILLER. The Government will have to have $40,000,000 ready in order to finance your scheme.

Mr. MAYO. No, sir; I do not think so.

Mr. MILLER. If you can figure out any other way of selling the bonds in serial form and getting me the money as it is needed at an interest rate of 4 per cent, I will say that such a thing as that was never known in the history of finances in this country, Mr. Mayo.

Mr. MAYO. Gen. Beach, the Chief of Engineers, figures it on the same basis.

Mr. MILLER. At 5 per cent.

Mr. MAYO. I mean in the same manner we are talking about.

Mr. MILLER. But he figures on a 5 per cent basis and your figures are on a 4 per cent basis.

Mr. MAYO. I understand, but I mean he figured it in the same manner.

Mr. MILLER. He figured it on a partial payment scheme with the money going in on a 5 per cent basis?

Mr. MAYO. Yes, sir.

Mr. MILLER. Now, you are figuring on partial payments and the money going in on a 4 per cent rate which is one-fourth of 1 per cent below the interest rate on Liberty bonds, and you are figuring on the delivery of those bonds as the money is needed. I will ask you if you have made any investigations of the money market of this country in order to get money on those terms?

Mr. MAYO. We have been led to believe it can be gotten at 4 per cent; yes, sir.

Mr. MILLER. Without betraying any secrets, is there any offer to give money at that price?

Mr. MAYO. We have not asked for it. Mr. Ford was invited by the Government to make this offer and he has made what he considers the best offer he cares to make.

Mr. MILLER. Your offer is at 4 per cent to finance this thing by the Government lending its credit.

Mr. MAYO. Our offer simply states what Mr. Ford is willing to give.

Mr. MILLER. And you are figuring on the Government lending its credit to this enterprise at 4 per cent.

Mr. MAYO. Yes, sir.

Mr. MILLER. That is the basis of your financing?

Mr. MAYO. Yes, sir.

Mr. MILLER. Now, we will take up this dam, the cost of which is $20,000,000, the annual interest at 4 per cent would be $800,000 a year.

Mr. MAYO. Yes, sir.

Mr. MILLER. Now, I take it you do not intend to commence the construction of Dam No. 3 until you have completed Dam No. 2?

Mr. MAYO. Not necessarily.

Mr. MILLER. Now turn to clause 6 of your contract, and while I understand you do not intend necessarily to do that, yet you have provided for that in clause 6, which reads as follows:

"As soon as the release of suitable construction equipment and labor forces at Dam No. 2 will permit, or at an earlier date if desired by the company, the company shall construct and complete for the United States Dam No. 3, its lock, powerhouse," etc. You do not mean to construct both of these dams simultaneously, do you?

Mr. MAYO. We might; yes, sir.

Mr. MILLER. Is there not very valuable machinery and hoisting apparatus and concrete mixers, etc., that you would have to duplicate if you intended to carry on the construction of both of these dams at the same time?

Mr. MAYO. Yes; but as you get along with the work on one dam you can commence to take away apparatus and put it on the other.

Mr. MILLER. Yes; but your apparatus will have to remain on Dam No. 2 until Dam No. 2 is completed; that is a portion of the apparatus.

Mr. MAYO. Yes; a portion of the apparatus.

Mr. MILLER. The concrete mixers, for instance, which are the principal things.

Mr. MAYO. They would all be built over for the other dam anyway.

Mr. MILLER. Of course, your compressors and things of that sort may be taken out. Now, we will figure that annual charge at 4 per cent, $800,000 a year, and we will figure on the two years period of construction. You say it can be done in one?

Mr. MAYO. I did not say so.

Mr. MILLER. It could be done in two years?

Mr. MAYO. I think that is the maximum needed time.

Mr. MILLER. The Government, then, will be out $1,600,000 on its interest fund in the two years. Now, you have a six-year period of flat payments of interest after the dam is completed or after 100,000 horsepower is generated. In other words, your lease period begins when dam No. 2 is capable of generating 100.000 horsepower.

Mr. MAYO. Yes, sir.

Mr. MILLER. It is practically completed then?

Mr. MAYO. Yes, sir; all but the power house.

Mr. MILLER. That is a six-year period at a flat rate of interest of $200,000 a year.

Mr. MAYO. That is right; yes.

Mr. MILLER. In the six-year period you will be paying in $200,000 a year on your flat interest payment and the Government will be paying out $800,000 a year in interest; or, in other words, the Government will be losing $600,000 a year; that is right, is it not?

Mr. MAYO. I think not. The Government will pay out the amount you state, but the credits will offset more than the Government pays out.

Mr. MILLER. Then in six years it will be six times $600,000, or $3,600,000, that the Government will lose.

Mr. MAYO. We do not figure the Government will lose it; no.

Mr. MILLER. That is what the Government will be out on these bonds, is it not?

Mr. MAYO. We do not think so.

Mr. MILLER. Why not?

Mr. MAYO. We have prepared a statement that shows a credit in favor of the Government at the end of six years.

NOTE.—The statement referred to will be found on page 301.

Mr. MILLER. I do not care anything about your statement, I want you to follow my figures, Mr. Mayo, because this matter has got to be explained on the floor of the House to our colleagues, and I want to be sure to get it right, and that is the reason I was so earnest yesterday. The members of this committee have got to explain to our colleagues this whole matter on the floor of the House. During the six-year period, after the completion of the dam, which is the period of your flat payment of interest, you will pay in twice $600,000, or $1,200,000 in the six years.

Mr. MAYO. Yes, sir; six times $200,000 is $1,200,000.

Mr. MILLER. The Government's interest will be at the rate of $800,000 a year for the six-year period or $4,800,000.

Mr. MAYO. Yes, sir.

Mr. MILLER. In other words, the Government is out $600,000 a year in the interest it will have to pay out more than you pay the Government under your flat payment of interest.

Mr. MAYO. But there are a number of offsets which make the final figure in favor of the Government.

Mr. MILLER. We will get to those offsets later. The Government is out $600,000 a year during that six-year period, is it not?

Mr. MAYO. I do not think they are out that; no, sir.

Mr. MILLER. That is the amount of interest the Government will have to pay on its issue of $20,000,000 worth of bonds for that dam.

Mr. MAYO. Yes, sir.

Mr. MILLER. The Government will have to pay that $800,000 a year; and you pay the Government, or your company, rather, pays the Government your flat rate of $200,000 a year for the six years.

Mr. MAYO. Yes, sir.

Mr. MILLER. And you do not commence to pay any interest until the end of the third year, do you?

Mr. MAYO. No, sir.

Mr. MILLER. Then there are three years when the Government will have to pay interest at the rate of 4 per cent per annum and get nothing from you, because you do not pay any interest until the dams are completed, do you?

Mr. MAYO. We do not get anything to pay a rental for until the dams are completed.

Mr. MILLER. You get 100,000 horsepower ready to be delivered to-morrow from the two steam plants, do you not?

Mr. MAYO. Yes; but that is an entirely different matter.

Mr. MILLER. Just answer my question, please. You get 100,000 horsepower ready for delivery to-morrow from the two steam plants?

Mr. MAYO. Yes, sir.

Mr. MILLER. With a title in fee. Then during all of this period when the Government is paying 8 per cent interest, and you are paying a flat rate of $200,000, you have in addition to that the use of 100,000 horsepower from the two steam plants?

Mr. MAYO. Yes, sir.

Mr. MILLER. Now, taking the 2-year period of construction, the Government will be out $1,600,000 of interest, and on the 6-year period that you pay a flat rate of interest, the Government is out $4,800,000 in interest, and you will pay the Government $1,200,000 in interest on the flat rate, and at the end of the 8-year period. the 6-year period of the flat payment of interest and the 2-year period of construction, the Government will have paid out $5,200,000 more than you have paid the Government. Is that right?

Mr. MAYO. I do not think so.

Mr. MILLER. Now, just tell me wherein I am wrong.

Mr. MAYO. As I say, there are a number of offsets.

Mr. MILLER. I am basing it on this interest period. We will get to those offsets later.

Mr. MAYO. The Government will pay out that much money in interest; yes, sir.

Mr. MILLER. We will be out then in eight years when you commence to pay interest on the flat rate which will be eight years from now?

Mr. MAYO. Six years.

Mr. MILLER. On dam No. 2.

Mr. MAYO. Six years, I think.

Mr. MILLER. Six years after the dam is completed?

Mr. MAYO. Yes; but your money is not all invested until it is completed.

Mr. MILLER. Yes; it is invested in two years when the dams will be completed; every dollar that the Government has put in that dam will be invested in two years, and after the Government has invested every dollar that goes into the dam, then there is a period of six years that you pay a flat rate of interest.

Mr. MAYO. That is only partly correct.

Mr. MILLER. Then, up to the time you begin to pay interest at the flat rate of 4 per cent on the investment, the Government will have paid out in interest $5,200,000 more than you have paid the Government.

Mr. MAYO. I think you are wrong.

Mr. MILLER. The Government excess on Dam No. 2 is $5,200,000. That is what the Government is out over and above what it has received from your company.

Now we will take Dam No. 3—the same cost, $20,000,000; the same rate of interest, 4 per cent; the same interest charge per year of $800,000—and take the two-year period of construction; and by the way, if you do not commence Dam No. 3 until you have completed Dam No. 2, it will be a three-year period of construction, and $800,000 more; but, provided you can complete Dam No. 3 also within the two-year period, we are out $1,600,000 interest on that at the rate of 4 per cent on the cost of the dam during that two-year period of construction. Now, at the end of two years the Government has got every dollar in that dam it will put in, and the dam is completed, capable of generating 80,000 horsepower; that is the rate, is it not?

Mr. MAYO. Yes.

Mr. MILLER. Now, you have a three-year flat rate of interest on Dam No. 3, instead of six years on Dam No. 2?

Mr. MAYO. Yes, sir.

Mr. MILLER. Take, then, the two-year period of construction and your three years of flat rate of interest, and again you do not pay anything until the end of the third year or you do not pay anything until one year after Dam No. 3 is completed; that is right, is it not?

Mr. MAYO. Practically so.

Mr. MILLER. It is actually right, is it not? That is the wording of the contract.

Mr. MAYO. The contract states one year from the date when 80,000 horsepower is installed.

Mr. MILLER. That is, one year after the dam is completed, because you say when 80,000 horsepower is generated the dam is completed, practically.

Mr. MAYO. Practically.

Mr. MILLER. And you do not pay even the flat rate of interest until a year after that time.

Mr. MAYO. The entire amount of money is not in the dam at that time.

Mr. MILLER. The dam is completed.

Mr. MAYO. But all the apparatus that goes into the power house is not.

Mr. MILLER. I am not talking about the apparatus.

Mr. MAYO. Or the power house.

Mr. MILLER. But the dam is completed and, of course, during the period of construction of the dam you will be working on installing this machinery, will you not?

Mr. MAYO. The power house and machinery is the most expensive portion of the dam.

Mr. MILLER. It is very expensive, I will admit that; but I would not say the most expensive. Do you think it is the most expensive?

Mr. MAYO. Exactly so, sir.

Mr. MILLER. Well, it is a very expensive proposition, but when the power house is completed you will have your machinery ready to install, of course, on the ground.

Mr. MAYO. We hope to.

Mr. MILLER. So there will be practically no interval, and will not take you very long—not over three months.

Mr. MAYO. It may be a year or more.

Mr. MILLER. If it is a year you have given yourself that year when you do not pay any interest at all. That is the basis on which you are financing it?

Mr. MAYO. We have got to build up our load for it to get any return out of it.

Mr. MILLER. I am not talking about that. I am saying that within a year after your dam is completed and the Government has its investment there, you do not pay even the flat rate of interest, because your flat rate of interest does not commence until one year after the dam is capable of generating 80,000 horsepower.

Mr. MAYO. That is not correct. The first interest payment is made one year after 80,000 horsepower of equipment is installed, but that payment covers the preceding and not the following year. We pay interest from the date the 80,000 horsepower is ready.

Mr. MILLER. Now, we will follow that through. Take the two-year period of construction, the same as we did before; the Government is again out on Dam No. 3, $1,600,000. Now, we will take your three-year flat rate of interest, and you pay $160,000 on Dam No. 3.

Mr. MAYO. Yes, sir; $160,000 per year for three years.

Mr. MILLER. The interest the Government will have to pay will be three years at the rate of $800,000 a year, or $2,400,000, will it not?

Mr. MAYO. You are making the same mistake as before.

Mr. MILLER. Plus the two years of the construction period, which will amount to just $4,000,000 exactly. Now, during that three years you have paid a flat rate of interest of $160,000 a year, or $480,000. That is right. is it not? That is your flat rate period on Dam No. 3?

Mr. MAYO. Yes, sir; that is our flat-rate period.

Mr. MILLER. Now, deducting your $480,000 from what the Government has paid in interest on its bonds there on the $20,000,000 investment leaves a deficit on Dam No. 3 of $3,520,000 that the Government has paid out in interest more than you have paid the Government under your contract.

Mr. MAYO. I think you have your interest too high during the construction period.

Mr. MILLER. I have figured on 4 per cent.

Mr. MAYO. I do not mean the percentage.

Mr. MILLER. You mean the period is too long?

Mr. MAYO. Yes, sir

Mr. MILLER. You have said in article 6 of your contract that you reserve the option to build Dam No. 3 after you have completed Dam No. 2, and if it takes one year, taking the shortest period, to build Dam No. 2 how can you build Dam No. 3 under a three-year period. You can not do it, can you?

Mr. MAYO. No, sir.

Mr. MILLER. Then the construction period on Dam No. 3 can in nowise be less than two years. Is not that right?

Mr. MAYO. I agree to that.

Mr. MILLER. Then on Dam No. 3 the Government will have paid out $3,520,000 more than you have paid in.

Mr. MAYO. I do not think so.

Mr. MILLER. Then I would like to know wherein that is wrong. You have agreed with me all the way down to the total.

Mr. MAYO. Will you repeat, please, in regard to the time?

Mr. MILLER. Two years for the construction period for Dam No. 3, wherein the Government is bearing an interest charge of 4 per cent on $20,000,000, or $800,000 a year.

Mr. MAYO. Are you not taking the interest for the whole 3-year period on Dam No. 3?

Mr. MILLER. No; I am taking the interest for two years on Dam No. 3.

Mr. MAYO. We do not need all the money until we finish.

Mr. MILLER. But the Government will have to have this money to pay you because you are going to rush this work down there.

Mr. MAYO. I do not see the necessity of issuing the bonds only as we need the money.

Mr. MILLER. If you can find any living man on earth that will take a bond issue and deliver it in serial form at 4 per cent interest, you will discover something in finance that the rest of us have never heard of.

Mr. MAYO. I do not think so.

Mr. MILLER. With an interest rate less than the rate on Liberty bonds. Any man in the world would put his money in Liberty bonds, because he would get one-fourth of 1 per cent more than he would get from these bonds, even paying par for Liberty bonds. I do not see how you are going to do that, and what I am trying to get at is the propos'tion from the Government's angle.

Mr. MAYO. We think it can be done.

Mr. MILLER. I am figuring on a rate of 4 per cent and on the cost of Dam No. 3 at $20,000,000.

Mr. MAYO. I think you should cut the construction period charge in two.

Mr. MILLER. If you can show me or show anybody how you can complete Dam No. 3 under two years I would like to hear it.

Mr. MAYO. No; but if we take the money as we use it, that interest rate will only amount to about one-half.

Mr. MILLER. You understand that the Government will have to finance this thing from a bond issue, because we can not go out and get any more money for this from the taxpayers, and we are figuring on its costing $50,000,000.

Mr. MAYO. Yes, sir.

Mr. MILLER. And it would not be good propaganda for this company to do that.

Mr. MAYO. But it can be issued in blocks.

Mr. MILLER. That is what I have said. I do not believe you can find anybody that will take a bond issue in blocks and make partial deliveries at 4 per cent interest.

Mr. MAYO. I do not think that is anything new.

Mr. MILLER. It would be less than Liberty bonds pay, and any company would rather put its money in Liberty bonds, because they would get from one-fourth to one-half per cent more than the Government would be paying on these bonds, even if they paid par for Liberty bonds.

Mr. MAYO. I am not a financier.

Mr. MILLER. I am not either; but I know a little someth'ng about the money market, but not very much. I wish I knew more. Figuring on the basis I have figured, the Government will have paid out in interest $3,520,000 more than you have paid them, and the only d'screpancy you can find in that statement is that the construction period is a little too long.

Mr. MAYO. The interest during construction is about double what it should be.

Mr. MILLER. Suppose we take that off; that will only decrease it $400,000 a year, or $800,000.

Mr. MAYO. That is about correct; yes, sir.

Mr. MILLER. That will be $3,500,000; and deduct from that $800,000, assuming you can complete Dam No. 3 in one year, the Government in that case would be out $2,720,000.

Mr. MAYO. All r'ght, sir.

Mr. MILLER. Now, add that to the $5,200,000 that we are out on Dam No. 2, and that would make a total of approximately $8,000,000 that the Government would be out before you reach that period under your contract when you begin to pay the flat rate of 4 per cent.

Mr. MAYO. The Government is going to spend that much, but they will not be out that amount.

Mr. MILLER. The Government will have paid that in interest on its bonds, will it not?

Mr. MAYO. Yes, sir.

Mr. MILLER. It will have paid $8,000,000 interest on its bonds over and above what your company will have paid the Government; that is money out of the United States Treasury, and that is the way I analyze your contract.

Mr. MAYO. Yes, sir.

Mr. MILLER. Now, at the end of the six-year period on Dam No. 2 and at the end of the three-year period on Dam No. 3 you begin to pay the flat rate of 4 per cent on the cost of construction; that is right, is it not?

Mr. MAYO. Yes, sir; on the cost of the work we have constructed.

Mr. MILLER. And you do not begin to amortize the plant until three years after the plant is completed. You are not even doing anything on the amort'zation of the plant.

Mr. MAYO. That is right; yes, sir.

Mr. MILLER. Then up until three years after the dam is completed, you pay nothing on your amortization account and up until six years after the dam is completed, you pay a flat rate of interest of $200,000 on Dam No. 2, and for a three-year period on Dam No. 3 you pay $160,000. Then you pay nothing in the world, under the terms of your contract, so far as these dams are concerned, until at least one year after both dams are completed, and then the flat rate only, because your flat rate does not commence until a year after the dam is completed; that is right, is it not?

Mr. MAYO. We begin to pay interest when the amount of power is ready to serve, as stated here.

Mr. MILLER. You have fixed that at one year after the dam is completed before you pay anything?

Mr. MAYO. No; they are not wholly completed.

Mr. MILLER. I thought you said you were going to complete the dams in a year and you objected to my construction period being too long.

Mr. MAYO. Well, I did not say that. The dam itself will be completed, but the power house and its apparatus will not be.

Mr. MILLER. Anyway, your contract does not commence until the dam is completed, capable of generating 100,000 horsepower at Dam No. 2 and 80,000 horsepower at Dam No. 3.

Mr. MAYO. That is correct; and even then it is far from being finished.

Mr. MILLER. It may be far from being finished, but I understood you to say a moment ago that when 80,000 horsepower is generated at Dam No. 3 and 100,000 horsepower is generated at Dam No. 2, that the dams are practically completed.

Mr. MAYO. No, sir.

Mr. MILLER. I understood you to say so a little while ago, Mr. Mayo.

Mr. MAYO. I was mistaken if I did. The power-house machinery is a very expensive end of it.

Mr. MILLER. The Government has to buy that machinery, does it not?

Mr. MAYO. Exactly, but——

Mr. MILLER (interposing). And it has to place all that machinery in position?

Mr. MAYO. But they do not have to pay for it until it is completed.

Mr. MILLER. That is all right. The Government will have to pay for its machinery probably the same as any other company would have to pay for it. The Government has to build these dams; it has to buy and install all of this machinery, turn it over ready for use; and even then, during the 100-year period, it has got to keep the dams in repair.

Mr. MAYO. I do not agree with you.

Mr. MILLER. Let us see about that.

Mr. MAYO. We pay a maintenance fund for them to keep it in repair.

Mr. MILLER. You pay $35,000 a year on Dam No. 2 and $20,000 a year on Dam No. 3.

Mr. MAYO. Yes, sir.
Mr. MILLER. And furnishing 300 horsepower to operate the gates.
Mr. MAYO. That is correct, 300 horsepower.
Mr. MILLER. Now, let us see if the Government is not to maintain these dams. Listen to this, Mr. Mayo, referring now to paragraph No. 4:

"The company will further pay to the United States, during the period of the lease of Dam No. 2, $35,000 annually, in installments quarterly, in advance, for repairs, maintenance, and operation of Dam No. 2, its gates and locks, it being understood that all necessary repairs, maintenance, and operation thereof shall be under the direction, care, and responsibility of the United States during the said 100-year lease period; and the company, at its own expense, will make all necessary renewals and repairs incident to efficient maintenance of the power house, substructures, superstructures, machinery, and appliances appurtenant to said power house, and will maintain the same in efficient operating condition."

You maintain the power house; now, let us see about the dams. I had that here a moment ago. Can you point me to that paragraph, Mr. Mayo?
Mr. MAYO. The paragraph which you read, No. 4, explains it fully, and is repeated again in paragraph 8 in reference to the other dam. The wording of both, however, is identical.
Mr. MILLER. Let us look at paragraph 8, which is the one that provides for the locks, etc., at Dam No. 3.
Mr. MAYO. No. 8 is identical with No. 4, with the exception that it applies to Dam No. 3.
Mr. WURZBACH. Look at the latter part of section 8.
Mr. MILLER. The latter part of section 8 refers to the power house of Dam No. 3. It is here some place.
Mr. WURZBACH. Is this what you refer to, "it being understood that all necessary repairs, maintenance, and operation thereof shall be under the direction, care, and responsibility of the United States"?
Mr. MILLER. Where are you reading?
Mr. WURZBACH. From paragraph 8.
Mr. MILLER. "It being understood that all necessary repairs, maintenance, and operation thereof shall be under the direction, care, and responsibility of the United States during the said 100-year period." That means we are maintaining these dams for 100 years, Mr. Mayo.
Mr. MAYO. Maintaining it with our money.
Mr. MILLER. Maintaining it with your money?
Mr. MAYO. Yes, sir.
Mr. MILLER. How so? You pay $35,000 a year, do you not?
Mr. MAYO. Yes, sir.
Mr. MILLER. You allot $35,000 a year for the operation of the locks and maintenance of the dam.
Mr. MAYO. Yes, sir.
Mr. MILLER. Then the dam is to be maintained by the United States, and if maintained by the United States for $35,000 a year plus the operation of the locks, we are even.
Mr. MAYO. Yes, sir.
Mr. MILLER. If the maintenance of the dam is over $35,000 a year, together with the operation of the locks, the Government is out, is it not?
Mr. MAYO. Yes, sir.
Mr. MILLER. Then the Government maintains the locks and operates them, maintains the dam during the 100-year period, and all you are bound to pay is $35,000 a year and furnish 200 horsepower.
Mr. MAYO. We are bound to the amounts we have stated on both dams and also the necessary amount to keep the power house and its apparatus properly maintained.
Mr. MILLER. During this construction period, when you do not pay anything, and during the six-year period of the flat payment of interest on Dam No. 2 and during the three-year period when you pay the flat rate of interest on Dam No. 3, all of this time you are getting 100,000 horsepower from the steam plant, are you not?
Mr. MAYO. It is there to get if we choose to use it.
Mr. MILLER. Yes.
Mr. MAYO. But it is a great deal more expensive power than the water power would be.

Mr. MILLER. That is the reason I was somewhat surprised yesterday when I asked you if the hydraulic electric energy at these dams was not the principal factor in your bid or the principal value of your contract with the Government.
Mr. MAYO. It is one of the principal factors.
Mr. MILLER. I can not see but what it is 90 and 9 per cent of the factors.
Mr. MAYO. That is your point of view.
Mr. MILLER. Now, let us take that angle for a moment. I do not want to tire you, Mr. Chairman.
The CHAIRMAN. You are not tiring me.
Mr. MILLER. Let us take up that angle a moment.
Mr. MAYO. You are not tiring me in the least, either.
Mr. MILLER. I am not tired, so we are all all right. Now, we will take up the hydroelectric power and let us analyze that a moment. You are getting 600,000 horsepower at Dam No. 2.
Mr. MAYO. When?
Mr. MILLER. When the dam is completed.
Mr. MAYO. When it is wholly completed; yes, sir.
Mr. MILLER. You get 250,000 horsepower at Dam No. 3.
Mr. MAYO. When it is wholly completed, we hope.
Mr. MILLER. You are getting 30,000 kilowatts from the Warrior steam plant, which is approximately 34,000 horsepower.
Mr. MAYO. Yes, sir.
Mr. MILLER. You are getting 60,000 kilowatts at the steam plant at nitrate plant No. 2.
Mr. MAYO. When we operate it.
Mr. MILLER. From my figuring that makes a total of 940,000 horsepower that those units will generate—that is simply a matter of calculation—when they are all running at maximum capacity, 940,000 horsepower or approximately 1,000,000 horsepower, the largest hydroelectric plant in the world, is it not?
Mr. MAYO. You are talking about a mixed plant of steam and water power.
Mr. MILLER. One hundred thousand of it is steam power, and the rest of it, 840,000 horsepower, or whatever it is, is from the hydraulic plant.
Mr. MAYO. And then the bulk of that is secondary power.
Mr. MILLER. We will come to that in a moment. That is the capacity of your dams, according to your own contract, 600,000 horsepower.
Mr. MAYO. That is the maximum capacity.
Mr. MILLER. Six hundred thousand horsepower at Dam No. 2, 250,000 horsepower at Dam No. 3, or 850,000 horsepower at the two dams.
Mr. MAYO. That is the maximum.
Mr. MILLER. And as I say, that is the largest hydroelectric plant in the world.
Mr. MAYO. One of them.
Mr. MILLER. Is it not larger than anything in the world at the present time.
Mr. MAYO. It is about the same as certain Niagara Falls plants I believe.
Mr. MILLER. That is, the aggregate of everything at Niagara Falls?
Mr. MAYO. No, sir; not the aggregate of everything.
Mr. MILLER. We have figured out 850,000 horsepower in your hydroelectric plant, 100,000 horsepower in your two steam plants, which will make 950,000 horsepower when all the units are running to maximum capacity. Now, out of your 600,000 horsepower at Dam No. 2 you are getting 100,000 primary power, are you not?
Mr. MAYO. Yes, sir.
Mr. MILLER. And you are getting 500,000 secondary power.
Mr. MAYO. Yes, sir; at times we are, but not all the time.
Mr. MILLER. But you are figuring on 100,000 primary horsepower.
Mr. MAYO. Yes, sir.
Mr. MILLER. Then there must be 500,000 secondary horsepower.
Mr. MAYO. Certainly, which is only a small part of the time.
Mr. MILLER. You are also figuring on 40,000 primary horsepower at Dam No. 3?
Mr. MAYO. Yes, sir.
Mr. MILLER. And you are figuring, of course, on 30,000 primary horsepower at your Warrior steam plant.
Mr. MAYO. Yes, sir.
Mr. MILLER. And you are figuring on at least 60,000 horsepower from the steam plant at nitrate plant No. 2.
Mr. MAYO. Yes, sir.

Mr. MILLER. When running to capacity, that makes a total of 230,000 primary horsepower that you have available.

Mr. MAYO. Yes, sir; at least that.

Mr. MILLER. One hundred thousand of which is available all during this period of construction of the dams, and all during the period of the six-year flat payment of interest period on Dam No. 2 and the three-year period of flat rate of interest on Dam No. 3.

Mr. MAYO. But it is not of any particular value during that period.

Mr. MILLER. But it is available if you want it?

Mr. MAYO. Yes, sir.

Mr. MILLER. Now, that will leave a surplus of 210,000 horsepower at Dam No. 3, will it not?

Mr. MAYO. I do not follow you.

Mr. MILLER. If Dam No. 3 will generate 250,000 horsepower and 40,000 of it is primary, there must be 210,000 of it secondary?

Mr. MAYO. Yes, sir.

Mr. MILLER. Adding the secondary power of Dam No. 2 to Dam No. 3, you have 710,000 secondary horsepower?

Mr. MAYO. Yes, sir.

Mr. MILLER. And you have got 230,000 primary horsepower. We will figure on that as a basis for a moment. Eighteen dollars per horsepower for primary power would be a cheap rate, would it not?

Mr. MAYO. Eighteen dollars a horsepower?

Mr. MILLER. Per annum.

Mr. MAYO. For the primary power?

Mr. MILLER. Yes.

Mr. MAYO. It would be a reasonable rate.

Mr. MILLER. Would it not be a very low rate?

Mr. MAYO. Not a very low rate.

Mr. MILLER. What rate does the Alabama Power Co. get for primary horsepower?

Mr. MAYO. I do not know.

Mr. MILLER. You have not made any inquiry?

Mr. MAYO. No.

Mr. MILLER. What rate have you figured on primary power in financing this plant?

Mr. MAYO. I do not remember.

Mr. MILLER. You have figured it on a very low rate, have you not?

Mr. MAYO. Quite a low rate; yes, sir.

Mr. MILLER. And you say $18 is a very low rate for primary horsepower?

Mr. MAYO. I do not say it is a very low rate. I say it is a reasonable rate.

Mr. MILLER. Then 230,000 horsepower at $18 per annum per horsepower would amount to $4,140,000 a year. That would be your income from your primary power based upon $18 per horsepower per annum, less your overhead for maintaining the power?

Mr. MAYO. For what period?

Mr. MILLER. For one year.

Mr. MAYO. You mean when we first start up?

Mr. MILLER. I mean when you get 230,000 horsepower, which we have seen is your primary power, and when all these units are in operation. That power is worth $18 per horsepower per year, and your income therefore from your primary power will be $4,140,000 a year. It is simply a matter of mathematical computation.

Mr. MAYO. It is much more involved than mere multiplication. You can not take it on the basis of what we might sell it for. It is simply a part of our cost in whatever we manufacture.

Mr. MILLER. Yes; it is a part of your cost, and $18 per horsepower is a reasonable price for it, you said.

Mr. MAYO. It is a reasonable rate to sell power about the country where there is a market for it; yes.

Mr. MILLER. I believe there was some evidence introduced here that the rate of the Alabama Power Co. down there was 3 mills per kilowatt-hour.

Mr. MAYO. Yes, sir.

Mr. MILLER. Three mills per kilowatt hour, running 24 hours a day would be at the rate of over $21 per annum per horsepower, would it not?

Mr. MAYO. It is a little under $20.

Mr. MILLER. A little under $20.

Mr. MAYO. I think so.

Mr. MILLER. Three mills for 24 hours a day would be 72 mills per day, figure that for 300 days in a year, and see what you get.

Mr. MAYO. Nineteen dollars and sixty-one cents.

Mr. MILLER. Well, that is higher than I have put it. Now, take your 710,000 secondary power.

Mr. MAYO. But you are predicating all your statements on the basis of our selling this power, which is not the fact.

Mr. MILLER. I am basing this upon your utilizing the capacity of your plant there for yourself or selling it; that is, using it, what you want, and selling the balance, and I am putting it at a very low rate both for consumption and for sale, lower than the Alabama Power Co. is getting to-day, because 3 mills, according to your figures, amount to $19.61 per horsepower per annum.

Now, we will take up the secondary power. Suppose you only get $6 per year per horsepower, you have an income from that of $4,260,000, and adding your primary and secondary power——

Mr. MAYO (interposing). An income from where?

Mr. MILLER. From your secondary power, Mr. Mayo, which amounts to 710,000 horsepower, according to what you told me a moment ago.

Mr. MAYO. There is no market for that there at present.

Mr. MILLER. Do you not intend to use your secondary power?

Mr. MAYO. As soon as we can build up to it.

Mr. MILLER. Absolutely, you are going to use it.

Mr. MAYO. It is going to take a great length of time to do it.

Mr. MILLER. And you will charge your various enterprises which you establish with power at a certain price, will you not?

Mr. MAYO. At a certain price; yes, sir.

Mr. MILLER. You will have to do that in order to ascertain the cost of your fertilizer.

Mr. MAYO. Exactly.

Mr. MILLER. And you will therefore use your secondary power, all that you can use, and what you can not use you will sell, of course; and you are capable of generating 710,000 horsepower.

Mr. MAYO. Yes, sir; but not 710,000 salable horsepower.

Mr. MILLER. Now, suppose we put that at a rate of $6 per horsepower per year; the way I figure it you get a revenue of $4,260,000 a year, which added to the revenue from your primary power will make a total of $8,400,000 a year from the total horsepower, less your overhead.

Mr. MAYO. What period are you figuring on?

Mr. MILLER. A year.

Mr. MAYO. But we do not get it all the year. The secondary power varies in accordance with the flow.

Mr. MILLER. Of course, it varies; otherwise it would be primary power.

Mr. MAYO. Exactly.

Mr. MILLER. So I am putting it down at just one-third of what you get for your primary power.

Mr. MAYO. While that may be true, you are not reducing the quantity. You do not get that total quantity the year round.

Mr. MILLER. No; because if you did it would be primary power and would be three times as high. I am putting it at one-third of what you get for your primary power.

Mr. MAYO. It should not only be at a much lower rate, but on a much less quantity.

Mr. MILLER. And I am putting it at one-third of what your primary power is worth.

Mr. MAYO. I do not think it should be over one-third.

Mr. MILLER. I do not, either, and I am putting it at one-third.

Mr. MAYO. But even at that you are wrong as to the quantity.

Mr. MILLER. Seven hundred and ten thousand horsepower?

Mr. MAYO. Yes; but it is not constant. It varies all the while.

Mr. MILLER. I understand that. If it was constant it would be primary power.

Mr. MAYO. If you would switch around and say one-third of the power at $6——

Mr. MILLER (interposing). I am putting down your secondary power at about one-third the price of your primary power.

Mr. MAYO. Per unit cost.

Mr. MILLER. Yes.

Mr. MAYO. Then we do not get the quantity.
Mr. MILLER. You get 710,000 secondary power.
Mr. MAYO. Only for a very short period. The maximum power might be a month's duration.
Mr. MILLER. You may get your primary power to full capacity for certain months in the year.
Mr. MAYO. It may be for a month.
Mr. MILLER. You may get 850,000 horsepower out of those two dams for two or three or four months in the year; that is right, is it not?
Mr. MAYO. But you are basing your argument on the whole year, are you not?
Mr. MILLER. I am basing my argument on exactly the definition of secondary power and primary power that you have given. If dam No. 3 will produce 250,000 horsepower and 40,000 of that is primary power, there must be 210,000 of it secondary power; that is right, is it not?
Mr. MAYO. It seems to me you are mixed all the while in the quantity of your secondary power.
Mr. MILLER. I would like to have you unravel it, if I am wrong about it.
Mr. MAYO. You are taking the maximum amount of secondary power and you are figuring that on a full year's basis.
Mr. MILLER. I am taking your maximum secondary power and figuring it at one-third of your primary power.
Mr. MAYO. But you are figuring it on the basis of that many horsepower-years.
Mr. MILLER. Yes.
Mr. MAYO. Which is wrong.
Mr. MILLER. You use your primary power at certain seasons of the year.
Mr. MAYO. All the year.
Mr. MILLER. I mean you use your secondary power at certain seasons of the year.
Mr. MAYO. Yes, sir; when we can.
Mr. MILLER. Now, there are certain seasons of the year in which you will have a large amount of secondary power, depending upon the flow of the water.
Mr. MAYO. Yes, sir.
Mr. MILLER. At certain seasons of the year you will have the full capacity of 850,000 horsepower.
Mr. MAYO. Yes, sir; but you are basing your figures at $6 per horsepower-year on the total maximum amount for the entire year.
Mr. MILLER. On the secondary power.
Mr. MAYO. Exactly; but your figures are on the horsepower-yearly basis.
Mr. MILLER. How would you figure it? You say I am wrong; I would like to know how you figure the value of your secondary power.
Mr. MAYO. I would divide the maximum quantity in thirds, approximately, and then take the price of about one-third of that.
Mr. MILLER. Well, taking 710,000 horsepower, which is the amount of secondary power, one-third of that would be 240,000 horsepower.
Mr. MAYO. Yes, sir.
Mr. MILLER. What price do you sell that secondary power for?
Mr. MAYO. We are not selling it.
Mr. MILLER. What price will you charge your various enterprises?
Mr. MAYO. Probably the cost.
Mr. MILLER. What will it cost? You have certainly figured this out in making the proposition.
Mr. MAYO. Yes, sir.
Mr. MILLER. How have you figured it?
Mr. MAYO. I do not remember just what our figures are.
Mr. MILLER. Well, what would you figure it to be worth—$6?
Mr. MAYO. The $6 would be a reasonable price.
Mr. MILLER. Now, we are putting that, according to the lowest possible thing we can make it, at one-third, and figuring it at $6, that makes an income of $1,440,000 a year from your secondary power and you are paying $1,200,000 a year to the Government. You will get $200,000 more out of your secondary power than you pay in interest to the United States Government during the 100 years of your lease.
Mr. MAYO. I do not agree with you.
Mr. MILLER. Wherein am I wrong?
Mr. MAYO. If we charge the power in as a part of the cost of our material the amount we get for the power is what it costs.

Mr. MILLER. You will certainly do that, will you not, Mr. Mayo?
Mr. MAYO. Yes, sir.
Mr. MILLER. You certainly will. Mr. Ford does that in his present plant; that is, charges up every dollar's worth of the maintenance of the power plant as a part of the overhead of the production.
Mr. MAYO. Exactly; but that goes in as its cost, not at what he could sell it for.
Mr. MILLER. And we are figuring according to your own figures, $6 and one third of the output.
Mr. MAYO. They are not my own figures. It is only what I stated was a reasonable figure.
Mr. MILLER. Well, I am taking your reasonable figure, and you will sell $1,440,000 worth of secondary horsepower, which, added to your $4,140,000 for your primary horsepower, makes $5,580,000 worth of hydraulic power that will be produced annually, and the only thing to be taken out of that is the overhead, the cost of the production, which will be considerable in your two steam plants, but very, very little in your two hydraulic plants.
Mr. MAYO. One of the prime reasons for being able to make cheap fertilizer is to get cheap power that you can put into it at practically cost.
Mr. MILLER. Incidentally, when you get cheap power for making fertilizer, you get cheap power for all the enterprises the company intends to establish there.
Mr. MAYO. We get the same benefit.
Mr. MILLER. And that is the reason I am still surprised that you do not say the power generated there is the great inducement for you to make this offer.
Mr. MAYO. That depends on the load factor that we can build up.
Mr. MILLER. I believe that is all, and I perhaps should apologize, but I understand every angle of this contract, I believe, now, and I know you do, and that is the reason I asked you from time to time wherein I was wrong, if I was wrong.
Mr. MAYO. The Government invited Mr. Ford to make this offer and he has made the best offer he figures he cares to make. He has tried to make it as fair as he knows how, and you will have to take it or leave it, at its face value.
Mr. MILLER. But this is the way the thing comes to us: Mr. Ford has made this offer. It is now up to the United States Government to accept it or to reject it.
Mr. MAYO. Yes, sir.
Mr. MILLER. And in order for Congress to have an intelligent opinion of this thing, and to intelligently pass upon it, this detailed information about which I have asked you will have to be laid before the House.
Mr. MAYO. Yes, sir.
Mr. MILLER. And I want to lay it before the House exactly as I understand it, and as I have said, I believe I understand now every angle of the contract, and I know you do.
Mr. MAYO. We are here to offer any explanation we can on our part.
Mr. PARKER. Mr. Mayo, you say that that power was reckoned when you were making up the basis for this offer at some figure, but you do not remember exactly what it was?
Mr. MAYO. No, sir.
Mr. PARKER. Can you not remember something about what it was, whether it was over one price or over another?
Mr. MAYO. We figured this proposition out as a whole, a combination of the dam project and the nitrate plant—the whole property.
Mr. PARKER. As to the power, you say Mr. Ford also charges power to his various plants; at what rate does he charge power?
Mr. MAYO. At cost.
Mr. PARKER. How much?
Mr. MAYO. Whatever the cost may be.
Mr. PARKER. What is it, generally?
Mr. MAYO. I have not figured the yearly rate.
Mr. PARKER. I do not want you to figure the yearly rate; I want you to tell me what you recall was the cost of power that he charged, about. Have you seen his books?
Mr. MAYO. He does not charge the horsepower up as such, but all the elements that go into making it are charged into the cost of his product.
Mr. PARKER. And at about what rate is it charged?
Mr. MAYO. There is no rate charged at all.

Mr. PARKER. What rate would the charges make? You have figured that up.
Mr. MAYO. I beg your pardon.
Mr. PARKER. What rate would the various charges that are made make; what rate per year per horsepower?
Mr. MAYO. I presume they would run around $20.
Mr. PARKER. In figuring secondary horsepower you said $6 would be a reasonable rate for one-third of it.
Mr. MAYO. Yes.
Mr. PARKER. Yes; I think it would be. How much did you figure it out when you were figuring up this contract?
Mr. MAYO. I do not remember, sir.
Mr. PARKER. You do not remember? Was it more than $6?
Mr. MAYO. I do not know.
Mr. PARKER. Would $8 be a reasonable rate?
Mr. MAYO. I have stated before that $6 was a reasonable rate.
Mr. PARKER. Would $8 be a reasonable rate?
Mr. MAYO. I think so.
Mr. PARKER. Would $10 be a reasonable rate?
Mr. MAYO. No, sir; I would not think so.
Mr. PARKER. Would $9 be a reasonable rate?
Mr. MAYO. Fairly so.
Mr. PARKER. Some of this secondary power runs for eight months in the year; a good part of it?
Mr. MAYO. Not a good part of it, I would say.
Mr. PARKER. Half of it?
Mr. MAYO. No, sir; maybe one-third of it, or less.
Mr. PARKER. For the one-third running eight months in the year, what is a reasonable rate for that power?
Mr. MAYO. I would say $6 or $7.
Mr. PARKER. For the whole of it or for a part of it.
Mr. MAYO. For that one-third for the eight-month period.
Mr. PARKER. For the one-third that runs for eight months, you would reckon $6 or $7.
Mr. MAYO. Yes, sir.
Mr. PARKER. Does another one-third run of six months?
Mr. MAYO. I would not think so; maybe for four months.
Mr. PARKER. One-third more would run for four months, and what rate would you charge on that or allow on that for the time it ran?
Mr. MAYO. That leads into a rather complicated question. You must have a lot of spare apparatus in order to use your maximum power when it is available. The amount of power you can deliver is not the amount you could generate.
Mr. PARKER. That is not an answer to my question, but I will not ask it any more if you do not want to answer it. Mr. Mayo, I understand that a kilowatt is reduced to horsepower by dividing by seven-tenths.
Mr. MAYO. By 0.746.
Mr. PARKER. If you divide 90,000 kilowatts by 0.746 how many horsepower do you get?
Mr. MAYO. Approximately one-third more.
Mr. PARKER. So that the 90,000 kilowatts would become 120,000 horsepower.
Mr. MAYO. Yes, sir.
Mr. PARKER. And not 100,000, as Mr. Miller reckoned, but 120,000 horsepower.
Mr. MAYO. Yes, sir.
Mr. PARKER. I would now like to ask you about another matter. A good part of this property Mr. Ford insists upon taking in fee.
Mr. MAYO. Yes, sir.
Mr. PARKER. For what reason?
Mr. MAYO. Because he wants to own it outright.
Mr. PARKER. For what purpose?
Mr. MAYO. For manufacturing purposes.
Mr. PARKER. Does he mean to mortgage it?
Mr. MAYO. I do not know.
Mr. PARKER. He could mortgage it, could he not?
Mr. MAYO. I presume he could.
Mr. PARKER. To use for manufacturing purposes a lease would be just as good as a deed, would it not, as far as the use is concerned?
Mr. MAYO. I think not.
Mr. PARKER. Why not?

Mr. MAYO. Because you would not want to make a large investment on leased property.
Mr. PARKER. Even if it was leased for 100 years, and although manufacturing property does not last over 20 or 30 years as a rule, and has to be renewed every 30 years.
Mr. MAYO. It is not all renewed, but is generally greatly changed.
Mr. PARKER. What security does the United States have on plant No. 2 outside of Mr. Ford's personal agreement?
Mr. MAYO. They have the value of the plant. That is always there.
Mr. PARKER. The value of the plant belongs to Mr. Ford after it is deeded to him.
Mr. MAYO. Yes, sir.
Mr. PARKER. He has it all.
Mr. MAYO. Yes, sir.
Mr. PARKER. He could convey it to somebody else.
Mr. MAYO. Yes, sir.
Mr. PARKER. There is nothing in the contract to prevent him conveying it to somebody else?
Mr. MAYO. I think he can only do it in accordance with the conditions of this offer.
Mr. PARKER. But he is given a full title.
Mr. MAYO. Yes, sir.
Mr. PARKER. What is to prevent his mortgaging?
Mr. MAYO. There are some restrictions on the title.
Mr. PARKER. Is there any restriction on his mortgaging?
Mr. MAYO. I do not think so.
Mr. PARKER. And the mortgagee would take the property, if there was a sale, leaving the Government only the company's responsibility, whatever it might be, if this was after Mr. Ford's death, say 50 years from now.
Mr. MAYO. I think that is possible.
Mr. PARKER. That is to say, if in 50 years from now the company had mortgaged and failed and had been foreclosed, all the Government's plants would be gone and nobody would be manufacturing, and the Government would have no security whatever?
Mr. MAYO. Well, I am not a lawyer, but I am of the opinion that if there was a mortgage placed on that property it would be placed with all the conditions of this offer attached.
Mr. PARKER. Will you be ready to put that in the contract, that the deed to plant No. 2 and to this property should be subject to the conditions of this contract?
Mr. MAYO. I think that would follow whether we said so or not.
Mr. PARKER. Would you be willing to put that in the contract expressly, because I do not think, as a lawyer, it does follow?
Mr. MAYO. I do not know.
Mr. PARKER. I want to make it plain, and I say, as a lawyer, that I doubt that very much, and I wanted to know whether you were willing to have the deed made subject to the conditions of this contract?
Mr. MAYO. I could not say definitely, but I am of the opinion Mr. Ford would be willing to do anything to properly protect the Government.
Mr. PARKER. Do you think he would be willing to do that?
Mr. MAYO. I think so.
Mr. PARKER. So if we insisted that that should be done you think he would not object?
Mr. MAYO. I do not think he would.
Mr. PARKER. What are the other ingredients of fertilizer, except the ammonium sulphate? You have studied this matter out.
Mr. MAYO. Phosphates and potashes.
Mr. PARKER. Where would you get the phosphates and potashes?
Mr. MAYO. The phosphate in the immediate neighborhood there.
Mr. PARKER. The phosphates are near there?
Mr. MAYO. Yes, sir.
Mr. PARKER. Where are they?
Mr. MAYO. Within a radius of 100 miles.
Mr. PARKER. Where?
Mr. MAYO. Well, one place is near Columbia, Tenn.
Mr. PARKER. Are they mineral phosphates?
Mr. MAYO. Yes, sir; rock phosphates.

Mr. PARKER. What are the other things that go into it?
Mr. MAYO. Potashes.
Mr. PARKER. Where would the potash come from?
Mr. MAYO. I could not say at present.
Mr. PARKER. What do you mean by "could not say"; has not potash been a very troublesome thing to get?
Mr. MAYO. Yes, sir.
Mr. PARKER. It comes mainly from Germany, does it not?
Mr. MAYO. A great deal; yes sir. We have a number of processes from which we think we can get a reasonable amount.
Mr. PARKER. And factories located near New York or along the shore have an advantage in freight rates in importing German potash, have they not?
Mr. MAYO. Potash could be brought there by water.
Mr. PARKER. Could be brought where?
Mr. MAYO. Could be brought to Muscle Shoals by water.
Mr. PARKER. I understand that, but is that a cheap way of getting it, coming up the Mississippi and the Ohio and the Tennessee?
Mr. MAYO. I think it would be the cheapest way.
Mr. PARKER. But is it as cheap as bringing it direct to the shore?
Mr. MAYO. It would not be as cheap as landing it at New Orleans.
Mr. PARKER. But is there not a great deal of difference in the freight in getting potash from Germany to this place and getting it, say, at New York or at same place near New York?
Mr. MAYO. There would be some difference; I do not know just what.
Mr. PARKER. Do you know how much it would be?
Mr. MAYO. No, sir. It does not necessarily have to come from Germany.
Mr. WURZBACH. Mr. Mayo, is there any present demand for as much as 900,000 horsepower at Muscle Shoals?
Mr. MAYO. No, sir.
Mr. WURZBACH. The value of power would depend upon the demand for it?
Mr. MAYO. To a great extent; yes, sir.
Mr. WURZBACH. What would you say would be the present value of primary horsepower at this present dam; I mean at Muscle Shoals; would it have any value at all?
Mr. MAYO. It would not have any value until you had built distributing lines to take it to where it could be used.
Mr. WURZBACH. What demand is there within 200 miles of Muscle Shoals at the present time?
Mr. MAYO. As a whole, I do not imagine there is a demand for possibly over one-third of it.
Mr. WURZBACH. What is necessary to be done in order to give the horsepower any value—that is, the value stated here at these hearings of $18 for primary horsepower and $6 for secondary horsepower?
Mr. MAYO. You would have to make a very large investment in a manufacturing plant there to use all the power, and then get a sufficient price for your product.
Mr. WURZBACH. It would depend upon a considerable investment in that neighborhood, would it not?
Mr. MAYO. Yes, sir.
Mr. WURZBACH. About what investment would be necessary, do you think, to utilize the full 900,000 horsepower, which includes the primary and the secondary power?
Mr. MAYO. In a manufacturing plant?
Mr. WURZBACH. Yes.
Mr. MAYO. I am of the opinion it will take in excess of $50,000,000.
Mr. WURZBACH. In excess of $50,000,000?
Mr. MAYO. Yes, sir.
Mr. WURZBACH. And I understand that that is what Mr. Ford proposes to do.
Mr. MAYO. That is Mr. Ford's intention; yes, sir.
Mr. WURZBACH. To expend about $50,000,000 in that neighborhood for the purpose of utilizing the water power that is available by these two dams.
Mr. MAYO. It is his intention to spend what is necessary to develop that plant as quickly as possible to use all the power.
Mr. WURZBACH. At the present time it has merely a potential value and has no actual value.
Mr. MAYO. I would say not until it is developed.
Mr. FIELDS. Mr. Mayo, I do not know anything about the production of power or its cost and shall not attempt to question you upon that point except

to try to get clear in my own mind Mr. Miller's figures. He figures primary horsepower at a value of $18 and secondary horsepower at the value of $6, I believe. Upon that value he calculates the total income to the proposed Ford company. It seems to me, however, he has overlooked the cost of the production of that power. If this primary horsepower is worth $18 per horsepower per annum, as he figures, and it cost 66⅔ per cent of that to produce it for overhead and operation, that amount reduces the total income to the company to one-third of the $18, does it not, using those figures as an illustration?
Mr. MAYO. Yes. I think Mr. Miller was just getting at the amount of the gross income.
Mr. FIELDS. But was making no allowance—and up to this time no allowance has been made—for the cost of production of that horsepower, which might be misleading to some people not familiar with the subject.
Mr. MAYO. Yes, sir.
Mr. FIELDS. Therefore the amount derived from the sale of this power, which he has figured out, will not all be clear profit to the Ford company if it should be sold at that figure?
Mr. MAYO. Certainly not; and it would all be dependent on our success in making it at a cost which would allow us to sell the product at a profit.
Mr. FIELDS. It seems to me he was basing his figures, too, upon a 100 per cent load factor. Is it not a fact that about the average load factor throughout the country is about 51 per cent?
Mr. MAYO. About that; yes, sir., That, according to the record, is the approximate load factor of the Alabama Power Co.
Mr. FIELDS. That would decrease the value to the company, or the return to the company, upon his figures very materially?
Mr. MAYO. It would cut it in two.
Mr. FIELDS. Is it your plan to charge the various industries to be supplied by this power with power at actual cost? I believe you stated that was Mr. Ford's plan, generally speaking.
Mr. MAYO. I think that would be the plan—that on all of the power that would go into the fertilizer we could not charge more than 8 per cent profit.
Mr. FIELDS. I want to refer now to the fertilizer. A good many questions were asked yesterday as to whether or not the Government has any assurance that Mr. Ford would continue the production of fertilizer. The first assurance is his agreement in his contract to do so, and the second assurance is the agreement to produce at least 110,000 tons of ammonium nitrate, for which he must find a market.
Mr. MAYO. Yes.
Mr. FIELDS. Where could he market that or how could he market it other than as a fertilizer product?
Mr. MAYO. His object is to make a complete fertilizer. The plant was built to make ammonium nitrate, which is not used usually as a fertilizer ingredient. It would have to be changed over to make ammonium sulphate, or something else.
Mr. FIELDS. In the production of these products he binds himself, and he must find a market for them.
Mr. MAYO. Yes, sir.
Mr. FIELDS. He is not going to produce that product and throw it into the river, or do anything like that?
Mr. MAYO. No, sir.
Mr. FIELDS. I believe there are three elements which contain plant food in the composition of the fertilizer.
Mr. MAYO. Yes, sir.
Mr. FIELDS. By producing nitrate at Dam No. 2, and by getting the phosphoric acid from the mineral deposits within 100 miles of the plant, you get two of the fertilizer ingredients at the plant or at a point in close proximity to the plant.
Mr. MAYO. Yes, sir.
Mr. FIELDS. Leaving only the third ingredient to be acquired at other places?
Mr. MAYO. We are working at several processes which look as though we would be able to make some potash on the ground.
Mr. FIELDS. So there is the possibility that you will be able to get two of those ingredients on the ground?
Mr. MAYO. Yes, sir; we may be able to produce all three of them there.
Mr. FIELDS. If you are not able to do that, potash is the only ingredient that you will have to get somewhere else?
Mr. MAYO. Yes, sir.

Mr. FIELDS. I know there are many formulæ for the making of fertilizer, but taking the average standard, about what per cent of that is potash?

Mr. MAYO. About 2 per cent.

Mr. FIELDS. Therefore, the great bulk of it will be gotten at the plant, or in the phosphorous fields of that region?

Mr. MAYO. Yes, sir.

Mr. FIELDS. With this condition do you have any fear that Mr. Ford may not be able to produce fertilizer as cheaply as it is produced by any other concern in the country?

Mr. MAYO. My opinion is that it will not cost more than half.

Mr. FIELDS. So long as he is not producing it as cheaply as it can be produced by any other firm in the country he can, of course, produce it at a profit, and could not get away from his contract to produce fertilizer?

Mr. MAYO. No, sir.

Mr. FIELDS. If he produces it at one-half the cost at which it can be produced by other concerns, that is so much better for the consumer of the fertilizer, is it not?

Mr. MAYO. Yes, sir.

Mr. FIELDS. In the average fertilizer compound, about what per cent of it is plant foods and what per cent is filler?

Mr. MAYO. About 12 or 14 per cent is plant food.

Mr. FIELDS. Then in transporting this fertilizer over the country on long hauls the large per cent of the transportation charges are for filler?

Mr. MAYO. Yes, sir; 86 to 88 per cent is filler.

Mr. FIELDS. Have you considered the possibility of constructing mixing plants at various distributing centers and shipping to those mixing plants the plant foods that go into the fertilizer and securing the filler, the heavier part of it, at or near the distributing plants to save the freight charges on the long hauls of that very heavy part of the product?

Mr. MAYO. Our hope is to make it with little or no filler at all and deliver it direct to the farmer, he to mix it himself with his own filler.

Mr. FIELDS. That would result in a very material saving to the farmer, would it not?

Mr. MAYO. Yes, sir.

Mr. FIELDS. If this personal reference may be pardoned, I have one character of soil that requires only phosphoric acid, and I purchased last year fertilizer containing 16 per cent of phosphoric acid and 84 per cent of filler, which appeared to be white sand or something of that kind, for which I paid $52 a ton, and I thought when purchasing that that if there were a workable plan by the use of which I would only have to pay the long freight charges on the 16 per cent of phosphoric acid and get this sand in my own country, of which I had plenty myself, that that would be quite a big saving to me.

Mr. MAYO. Mr. Ford hopes to make a great economic saving in that way.

Mr. FIELDS. In the production of the fertilizer contemplated by Mr. Ford is it possible that any by-product would come from it?

Mr. MAYO. From the making of the fertilizer?

Mr. FIELDS. Yes, sir.

Mr. MAYO. We hope so; yes, sir.

Mr. FIELDS. Would the value of those by-products have any bearing upon the cost of the fertilizer?

Mr. MAYO. They would surely be credited to the fertilizer; yes, sir.

Mr. FIELDS. Adding that much more to the cheapening of the product?

Mr. MAYO. Yes, sir.

Mr. FIELDS. Mr. Mayo, what agricultural implements are now manufactured by Mr. Ford?

Mr. MAYO. Only the farm tractor, unless the automobile may be considered as a farming implement.

Mr. FIELDS. And the truck is used by the farmer very extensively now as a cheaper means of transportation?

Mr. MAYO. Yes.

Mr. FIELDS. Would the cheaper power, such as you hope to get at Muscle Shoals, enter into the cost of the production of these implements, should they be manufactured there, or the parts of which they are constructed be manufactured there?

Mr. MAYO. Yes; or the raw materials of which the parts are made.

Mr. FIELDS. Would you feel disposed to make any statement as to Mr. Ford's intention or desire in reference to meeting the needs of the agricultural interests

of the country in the production of fertilizer and the manufacture of farm implements, including trucks, etc.?

Mr. MAYO. Well, of course, it is Mr. Ford's dream, in regard to this fertilizer product, to make the price of it so low that everybody can use it in any quantity they wish to; that the expense would not prevent them from using all they should use. He also hopes that ultimately he can make his raw materials for his automobile trucks and tractors at a lower price and in that way help reduce the price of that commodity. It has been his dream for a long time to make the final combined price for the automobile, the truck, and the tractor at $1.000. At present the price runs about $1,200, so he is at the present time quite near his goal.

Mr. FIELDS. With regard to the tenure of the franchise, I believe the American Aluminum Co. has power plants in the upper Tennessee River, above Muscle Shoals, and that their franchise is in perpetuity.

Mr. MAYO. So I understand.

Mr. FIELDS. That is my understanding. Do you know of any good reason why the water-power right should be perpetual at the dams of that company and only be for 50 years at the proposed Ford Dam?

Mr. MAYO. I see no reason for that.

Mr. FIELDS. Do you care to express a positive opinion, Mr. Mayo, as to whether Mr. Ford would consider the Muscle Shoals proposition under a 50-year franchise?

Mr. MAYO. No, sir; Mr. Ford would not consider it.

Mr. HILL. Mr. Mayo, this question depends particularly on the duration of this franchise. Will you please turn to paragraph 17 of Mr. Ford's amended offer, at the top of page 18? That paragraph reads as follows:

"In order that said company may be supplied with electric power and the farmers with fertilizers after the termination of the said 100-year leases, should the United States elect not to operate said power plants but determine to lease or dispose of same, the company shall have the preferred right to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon."

As I understand it, that means at the end of the 100-year period?

Mr. MAYO. Yes, sir.

Mr. HILL. And it is your opinion that Mr. Ford would not make this proposition except on a 100-year period basis?

Mr. MAYO. Yes, sir; that is correct.

Mr. HILL. Paragraph 17 continues:

"If the said leases are not renewed or the property covered thereby is not sold to said company, its successors or assigns, any operation or disposal thereof shall not deprive the company, its successors or assigns, of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years."

As I read that, it looks to me as if after the 100-year period, should this proposition be accepted, there is a perpetual right on the part of the company or its successors or assigns to be provided with an amount of power equal to its needs, not in excess of the average amount used by it annually during the previous 10 years. My construction is that beyond the 100-year period there is an absolutely perpetual, prior claim by this company on the United States Government to be furnished with that amount of power. What is your view on that?

Mr. MAYO. The thought in framing that paragraph was that we would have a very large investment built up around the dams, and it would not be fair to the company to take the power from under their feet and give it to some one else; that they should have a preferred claim, everything else being equal.

Mr. HILL. Now, then, that paragraph, according to Mr. Ford's intention, means that after the 100-year period, if it is not arranged that his interests or the successors of his company shall buy the property, he will have a perpetual right to get indefinitely and have a first lien on the power that is produced there, not to exceed the average amount used annually in the previous 10 years.

Mr. MAYO. He thought he ought to have it, everything else being equal.

Mr. HILL. That is a very unusual arrangement; it is one I had not noticed before. Here is the proposition which he puts up, as I understand it: It does not make any difference what the ultimate disposition is, his company has a perpetual first claim on the plant after the 100-year period; is that not right?

Mr. MAYO. Yes, sir.

Mr. HILL. Do you think it is a proper thing for the United States Government to tie itself up in reference to this plant forever?

Mr. MAYO. I think so. I do not see that they can lose anything by doing so. They can always exact of him whatever they could get from anybody else.

Mr. HILL. Does Mr. Ford put very much stress on this clause relating to after the 100-year period?

Mr. MAYO. I think so. He will have built up a plant to absorb all the power, and if you took the power away from him the plants would have no value.

Mr. HILL. As I understand this proposition, if at the end of 100 years Mr. Ford's company is not allowed to purchase this plant they have still in perpetuum a prior lien on the output of this plant up to its full capacity, not in excess of the average annual amount which he has taken for the previous 10 years.

Mr. MAYO. Yes, sir.

Mr. HILL. In other words, it is indefinite, forever.

Mr. MAYO. Yes; but the terms are to be agreed upon.

Mr. HILL. This clause does not say so.

Mr. MAYO. I thought it did. It says "upon such terms as may then be agreed upon."

Mr. HILL. No, it says——

Mr. MAYO (interposing). The thought was that he should get the power at the going rate, which anybody else would pay for it at that time.

Mr. HILL. But it gives him a prior lien.

Mr. MAYO. As I read it, it only gives him a preference, at a rate to be agreed upon.

Mr. HILL. My thought was that Mr. Ford did not intend to tie the United States Government up forever.

Mr. MAYO. It was not meant to tie them up. He figured he had a very large investment there and that he ought to have a preference at an equal rate.

Mr. HILL. Let me read this clause to you: "If the said leases are not renewed or the property covered thereby is not sold to such company, its successors or assigns, any operation or disposal thereof shall not deprive the company, its successors or assigns, of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years."

Suppose in the previous 10 years the company used every ounce of power, and then suppose that the 100-year lease terminates, and suppose the United States wants to use this plant for its own purposes. As I read that provision of the lease the United States is bound forever to continue to give to this company this prior right on that amount, so that the United States could not use it for any other purpose; is that not your understanding?

Mr. MAYO. On the basis of reasonable terms.

Mr. HILL. I am not talking about the terms; I am talking about the amount. There is no option as to the amount.

Mr. MAYO. I understand exactly what you mean. That paragraph was put in there in fairness only. If we were using 100 per cent of the power when the 100-year period lapsed, although we had used only 75 per cent during the prior 10 years, we would have the right to ask for only 75 per cent of it.

Mr. HILL. It seems to me this is rather important, and I would like to get it clear. If, say, in the previous 10 years of the contract, from the ninetieth to the one hundredth year, this company or its successors or assigns uses every kilowatt of power, and then, after that, if the United States decides not to sell to them, then that company or its successors or assigns has a prior claim on the output of the plant; is that not right?

Mr. MAYO. It says "reasonable rates" to be made at that time.

Mr. HILL. Subject to rates, but not as to amount.

Mr. MAYO. It would cover the whole amount, if we had used the whole amount the last 10 years.

Mr. HILL. Is not that then a virtual disposition, in perpetuity of this property to that company?

Mr. MAYO. At reasonable rates; yes, sir.

Mr. HILL. Forever?

Mr. MAYO. At reasonable rates.

Mr. HILL. Leave the rates out.

Mr. MAYO. Oh, but the rates come in.

Mr. HILL. No; they do not.

Mr. MAYO. I think they do.

Mr. HILL. Does this not contemplate an agreement that whether at the end of the 100 years or not the United States decides not to sell to this company, that company under certain conditions shall be entitled to all the output forever, irrespective of anything except the fixing of rates? Is that clear? My own thought was that this particular paragraph did not mean what it appears to mean, because that had not been raised before.

Mr. MAYO. The intent is that after the 100-year period has lapsed the company has the right to get the same amount of power that they have been using the last preceding 10 years, at a reasonable rate.

Mr. HILL. Forever?

Mr. MAYO. Yes; subject to agreement.

Mr. HILL. I do not see anything like that here; I see the absolute grant of a perpetual first lien on the purchase of this company, and I want to ask if that is the intention of this offer?

Mr. MAYO. In the third line of the paragraph it says "the preferred right to negotiate."

Mr. HILL. Yes; I see that. Paragraph 17 is made up of two parts, and the first part takes up the possible sale to this company.

Mr. MAYO. And upon such terms as may then be agreed upon.

Mr. HILL. That is the sale.

Mr MAYO. It says "for the lease or purchase."

Mr. HILL. That ends with the word "upon." I invite your attention to the following words: "If the said leases are not renewed or the property covered thereby is not sold to said company, its successors or assigns, any operation or disposal thereof shall not deprive the company, its successors or assigns, of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years."

The point I have especially in mind in connection with that is this: Suppose at the end of this 100-year period it has become obvious to the people of the United States that the United States should own all its great water powers and control them itself, and dispose of them itself, in its own way, dispose of the products of them. That is not an inconceivable thing?

Mr. MAYO. No, sir.

Mr. HILL. As I read the second part of paragraph 17 there is conveyed there an absolute right, the taking away of which would be a violation of the guaranties of the Constitution, which gives this company a prior claim on the output of this particular project. I want to ask if that is the intention? It seems to me it is.

Mr. MAYO. The Government is the owner of this dam for the 100 years, is it not?

Mr. HILL. The Government would be the owner after the 100 years?

Mr. MAYO. No, sir; they are always the owner.

Mr. HILL. Oh, yes; but there is a lease up to the 100-year period?

Mr. MAYO. Yes, sir.

Mr. HILL. What I mean to say is that although this appears to be only a lease up to 100 years, it is practically a grant in perpetuity, absolutely, without the 100-year period?

Mr. MAYO. But in that time, if it should be decided that the Government should own its water powers, it already owns this one, and it seems to me this would be subject to the same rules and regulations under which they would sell their power from other dams.

Mr. HILL. But you would have a preferred claim on the output?

Mr. MAYO. We think we should have.

Mr. HILL. You think that under this contract this company which Mr. Ford proposes to create should have forever a preferred claim on all the output of this plant; is that right?

Mr. MAYO. Oh, yes, sir; at reasonable terms. If the Government is selling all of its own power, controlling all of its own power, we should get it at the going rate.

Mr. HILL. On reasonable terms, as to terms, but not as to output. You would acquire a perpetual exclusive right to use the output; is that not right?

Mr. MAYO. Not all the output, but the average amount we had used for the last 10 years. It was taken for granted that in that time the thing would become stabilized, and we would be using a certain amount of power and that we would have the right to use that power. There are indefinite grants of

power rights on navigable streams. The Mississippi River Power Co. has one at Keokuk, Iowa; the Alabama Power Co. has one at Lock 12 on the Coosa River. There are a number of others. The idea is nothing new.

Mr. HILL. If you had used all the power you would have the right to all of the output?

Mr. MAYO. Yes, sir.

Mr. HILL. In other words, paragraph 17 proposes to the Government that the Government shall become a partner with this company in the creation of this great project; is that not right?

Mr. MAYO. Well, only in so far as a landlord would be a partner.

Mr. HILL. Under the contract, what is the maximum amount of money that the United States Government would be called upon to advance for the construction of Dams No. 1 and No. 2? As I see it, the contract is utterly silent on that. The contract, in paragraphs 2 and 6, provides that the company shall complete, without profit, Dams Nos. 2 and 3 at actual cost, but the United States shall put that money up.

Mr. MAYO. Yes, sir.

Mr. HILL. The Secretaryof War, on page 4, says this: "The present estimates of the Engineer Department for the completion of both Dam No. 2 and Dam No. 3 is $50,000,000. Engineers for Mr. Ford have presented a lower estimate, but Mr. Ford has not seen fit to guarantee the construction for this lower figure."

Mr. MAYO. Yes, sir; that is correct.

Mr. HILL. In your contract, as I understand it, you do not set any figure as a maximum for the amount to be advanced by the United States; is that correct?

Mr. MAYO. That is correct, but he pays interest on whatever it may cost.

Mr. HILL. But he pays interest at 4 per cent?

Mr. MAYO. Yes, sir.

Mr. HILL. It is quite conceivable that the cost might be $50,000,000, is it not?

Mr. MAYO. We do not think so.

Mr. HILL. The Army Engineers estimate the cost at $50,000,000.

Mr. MAYO. They did, but they think our estimate was also a fair one.

Mr. HILL. You do not guarantee that it will not cost $50,000,000, do you?

Mr. MAYO. Neither do they.

Mr. HILL. They are not building it, but you are.

Mr. MAYO. We hope to.

Mr. HILL. We will assume for the purpose of this inquiry that you are. Assuming for the purpose of our discussion here that you are building this proposition. The Army Engineers have estimated it would cost $50,000,000.

Mr. MAYO. Yes, sir.

Mr. HILL. Of course, we are looking at it from a good many angles. Personally, I am much interested in the fertilizer end of it, and I am also interested personally, very much, in the national defense end of it. But this is a very novel proposition for the United States Government. It has never signed a contract like this in its history.

Mr. MAYO. I do not think any individual ever made one either.

Mr. HILL. I do not think he did. Therefore, for the purpose of testing it we are asking these questions. The United States is called upon to advance a certain number of millions of dollars for the actual cost of No. 2 and No. 3 dams.

Mr. MAYO. Yes, sir.

Mr. HILL. Am I right in supposing that the contract does not limit that amount; it is the actual cost?

Mr. MAYO. That is right.

Mr. HILL. If engineering difficulties should suddenly develop the cost would be greater, would it not?

Mr. MAYO. Yes, sir.

Mr. HILL. If an earthquake or an extraordinary flood should destroy those dams, what would happen then? The United States is bound to keep on advancing money; that is, the necessary amount, is it not?

Mr. MAYO. Yes, sir.

Mr. HILL. Because those are what are known as acts of God, and are not included in the contract.

Mr. MAYO. That is correct.

Mr. HILL. Therefore, the United States is obliged to advance an indefinite sum at 4 per cent?

Mr. MAYO. Yes, sir.

Mr. HILL. And the money that they so advanced makes a project on which the proposed company has a prior perpetual lien on all the output; is that not right?

Mr. MAYO. Yes, sir; within the limitations stated.

Mr. QUIN. Mr. Mayo, every kind of assumption has been indulged in since this proposition has been submitted, except the second coming of the Savior at the end of the world. If Mr. Ford, through this generous offer to the people of the United States, can bring forth all of these violent assumptions I have an idea that these gentlemen think he can bring down the cost of fertilizer to the farmers of the country.

Are you familiar with the debates that occurred in this committee and on the floor of the House and the Senate when the proposition was made to establish the dams and the nitrate plants at Muscle Shoals?

Mr. MAYO. I am not very familiar with them; no, sir.

Mr. QUIN. There were two propositions set rorth at that time, the primary idea being that there should be a nitrate plant there to make powder for use by the United States Army in time of war, and that in peace times fertilizer should be made there. I was an ardent advocate of both of those propositions.

After the war terminated, Congress, after a violent debate, failed to provide for the completion of that dam. Now, the Ford proposition calls for the completion of the dams and the carrying out of both purposes for which the original plant was started, does it not?

Mr. MAYO. Yes, sir.

Mr. QUIN. Mr. Hill wasted a lot of time in asking questions and endeavoring to read out of Mr. Ford's proposition what is plainly written in it. Listen to what it says on page 18, section 17, of the report of the Secretary of War. This is the language: "In order that said company may be supplied with electric power, and the farmers with fertilizers, after the termination of the said 100-year leases, should the United States elect not to operate said power plants but determine to lease or dispose of them." Mr. Ford puts it in his proposition, does he not?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then all of that questioning was just muddying the waters and scuttlefishing around.

Mr. Mayo, one of the chief elements in the cost of fertilizer, put up by the fertilizer factories, is in the handling and sacking and mixing of this dirt with the real fertilizer, the ammonium nitrate, and the potash; is that not true?

Mr. MAYO. Yes.

Mr. QUIN. As I understand it, Mr. Ford proposes, by utilizing the sagacity of the men he has around him, to manufacture all the necessary ingredients and compounds of fertilizer in their concentrated form?

Mr. MAYO. As far as possible; yes, sir.

Mr. QUIN. He proposes, as he has done in the past, to get the best technical ability anywhere he can in the country or out of the country for that purpose?

Mr. MAYO. Yes, sir.

Mr. QUIN. It is your judgment that these compounds can be prepared and distributed in their concentrated form directly to the farmers of the United States?

Mr. MAYO. Yes, sir.

Mr. QUIN. And that the farmer, or even the free nigger, who needs no intelligence, can gather the earth out of his fence corners and out of the woods, and under the plain directions that these technical men will write as to how to mix the four or five parts of earth and dirt with concentrated fertilizer, they can fix their own fertilizer?

Mr. MAYO. That is the plan.

Mr. QUIN. In other words, it is just like the druggist mixing his medicine in the bottle and writing on there directions that it shall be mixed with so much water?

Mr. MAYO. Yes, sir.

Mr. QUIN. The farmer goes to a spring and gets his water and puts three tablespoonfuls of water with one spoonful of the medicine, following the directions of the druggist.

Mr. MAYO. Yes, sir.

Mr. QUIN. Is it not presumable that the farmers of the United States can follow the directions of Mr. Ford's experts in mixing this concentrated ferti-

lizer with the earth that they get from their own farms, just like they can mix medicine by following the directions they get at the drug store?

Mr. MAYO. We think so.

Mr. QUIN. I know it is so; I have been doing it. Is it not possible in that way to save one of the main factors that enters into the cost of this fertilizer because of the high freight rates that the railroads are charging now?

Mr. MAYO. Yes, sir.

Mr. QUIN. They have in most of the counties in the United States where they use fertilizer what they call farm-demonstration agents. Are you familiar with their work?

Mr. MAYO. Not very familiar.

Mr. QUIN. Those farm-demonstration agents are employed by the counties, and they instruct the farmers and analyze the soil and suggest what that soil needs. Those same men—and the farmers are not so ignorant as some gentlemen think they are—are intelligent enough to know how to mix the fertilizer which those farm-demonstration agents would show them how to mix. They could do that, could they not?

Mr. MAYO. Certainly.

Mr. QUIN. If I remember correctly, Brother Miller, the other day before you came here, suggested that there was nothing in this contract by which Mr. Ford agreed to make fertilizer. I think it has been demonstrated that it is here. Then he suggested that Mr. Ford was to get 8 per cent just for the manufacture of the fertilizer, and then that some agent of the trusts would come along and buy that and sell it to the farmers, and rob the farmers. There is no such thing as that which could be contemplated under the terms of this contract, or according to the intentions of Mr. Ford, is there?

Mr. MAYO. I certainly do not think so.

Mr. QUIN. Your intention is that this fertilizer shall be distributed, because it says in the agreement that it shall be distributed by a territorial distribution, which shall be directed by this board, which is provided for.

Mr. MAYO. By the farmers' board.

Mr. QUIN. Directly to the farmers.

Mr. MAYO. It does not definitely say so, but that is the intent.

Mr. QUIN. This board is to be a board of nine men, seven of whom are named by the leading farm organizations of the United States, or their successors?

Mr. MAYO. Yes, sir.

Mr. QUIN. And their names are sent by the President to the Senate of the United States and confirmed by the Senate. Then the Ford organization or company is to elect or name two of the members of that board?

Mr. MAYO. Yes, sir.

Mr. QUIN. That particular board is to have the right to look over the books and see that the cost and the selling price does not allow over 8 per cent profit to Mr. Ford. Then this board is further to see that this fertilizer is properly distributed territorially?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then seven of the nine members of that board created and established for that purpose are directly representing the dirt farmers who will use the fertilizers?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then there is a direct connection between the farmers and this Ford company?

Mr. MAYO. We think so.

Mr. QUIN. We have great respect for Mr. Ford in my country; the farmers call him Uncle Henry. He gets us the cheapest cars, and cars that poor men like me can ride in now, and I believe he is going to give us cheap fertilizer.

Mr. MAYO. Competition did not force him to the price of his car, did it?

Mr. QUIN. No, sir; it brought the rest of them down. And he is going to bring the prices of these fertilizer men down.

Mr. MAYO. If you give him a chance.

Mr. QUIN. Under the plan, as I see it, the Government building Dam No. 2 and Dam No. 3, and Mr. Ford taking all of that power under his control, he can establish not only this splendid fertilizer factory, but other factories for the benefit of the farmers and the masses of the people of this country?

Mr. MAYO. Yes, sir.

Mr. QUIN. Does he not contemplate doing that very thing?

Mr. MAYO. I think so.

Mr. QUIN. Instead of Mr. Ford going into competition with the Alabama Power Co. or anybody else in the sale of power, he proposes to use this cheap power for the purpose of making the necessary things for the masses of the folks and the farmers to use at the cheapest possible cost of production; is that not true?

Mr. MAYO. That is his intention; yes, sir.

Mr. QUIN. Is it not the idea of Mr. Ford, after he gets started, to go above these dams which the Government completes, and utilize the power in the river by the construction of dams at different places to make more water power?

Mr. MAYO. He has said that it is his intention; yes, sir.

Mr. QUIN. The possibilities of water power outside of these two dams are very great, are they not?

Mr. MAYO. Yes, sir.

Mr. QUIN. The potential, inert water power is there now?

Mr. MAYO. Yes, sir.

Mr. QUIN. My friend, Mr. Miller, went at length into the details as to how many horsepower would be developed there and what Mr. Ford is being paid. That river has been there ever since the earth of the United States has been standing and been washed by the oceans, has it not?

Mr. MAYO. I expect so.

Mr. QUIN. Has anybody up to this good hour ever built those dams to utilize that water power which Mr. Miller thinks Mr. Ford is going to get for nothing?

Mr. MAYO. No, sir.

Mr. QUIN. The Chief Engineer of the United States Army, Gen. Beach, for whom we have great respect, stated that that is the finest water-power stream in the United States. He did say that the St. Lawrence River might possibly have a little more power, but a part of that is in Canada. Now, with the ambition of Mr. Ford, and with the money behind him, I do not believe he wants this proposition for the purpose of making money out of it; I know he has more money than he can ever spend.

Mr. MAYO. Yes.

Mr. QUIN. Is it not possible that instead of those woods and the tall trees with the wind whistling through them there will be there humming factory wheels with hundreds of thousands or even millions of men employed in industries which are run for the benefit of the masses of the American people?

Mr. MAYO. We hope so.

Mr. QUIN. As I understand it, the rich need no help along this line; it is the poor people in the United States that need the help of Mr. Ford and men like him to develop enterprises of this kind.

Mr. MAYO. We think so.

Mr. QUIN. His ultimate ambition is to lend his life and his great wealth and his ability and the brains he can employ to help the poor men like me and the rest of us.

Mr. MAYO. Yes, sir.

Mr. QUIN. Then if Mr. Ford does happen to get this secondary water power for $6 a horsepower per year and this primary water power for $18 per horsepower per year, which the Government is throwing away now, would it not be to the paramount interest of the United States to accept the Ford proposition and let him take it on those terms, or even give it to him?

Mr. MAYO. We think so.

Mr. QUIN. With all of the posibilities in view for making by-products, is it not reasonable to conclude that Mr. Ford can make the fertilizer compound almost as a waste, at a very low cost, because of the valuable products he can get in the metallic line?

Mr. MAYO. That is one of the possibilities; yes, sir.

Mr. QUIN. The electro furnace can do much in that regard, can it not?

Mr. MAYO. A very great deal.

Mr. QUIN. Is it not possible that through the scientific endeavor of the brains he can get in the United States or across the water, that many valuable metals can be gotten out of this enterprise and fertilizer will be almost a mere waste, and he can make it so cheaply that he can almost give it to the farmers of the United States.

Mr. MAYO. That is one of the possibilities.

Mr. QUIN. I believe that. If Dam No. 2 is completed in the time specified, will Mr. Ford be making fertilizer at that time?

Mr. MAYO. His intention was to start making it within a year.

Mr. QUIN. Maj. Burns, of the Ordnance Department of the Army, stated the other day that one-half of the nitrogen element of the fertilizer in the United

States can be produced there out of this 110,000 tons of ammonium nitrate per year. Is that correct? I believe you stated about one-fifth, or 20 per cent.

Mr. MAYO. I think I am nearer correct than he, as to percentage of total nitrogen.

Mr. QUIN. Gen. Williams stated the other day that although he did not doubt that could be done in the long run, he put the total at 8,000,000 tons. I think he was in error, and I think Maj. Burns was more nearly correct.

Mr. MAYO. Seven or eight million tons——

Mr. QUIN (interposing). The maximum was 8,000,000 tons; but they never have used quite that much. But we are going to use a great deal more fertilizer when we get it cheaper. You do not know what the exact figure is, do you?

Mr. MAYO. I do not know the exact figure of total fertilizer tonnage of all kinds.

Mr. QUIN. I wish you would get that, if you please, and put it in the record.

Consumption of fertilizers in the United States, fiscal years ending 1913 to 1920.

[From the American Fertilizer Handbook for 1921, p. 20.]

	Tons.		Tons.
1913	6,544,345	1917	6,206,543
1914	7,340,528	1918	6,756,743
1915	5,563,212	1919	6,891,322
1916	5,390,549	1920	7,654,239

Mr. MAYO. I shall be glad to do that for you.

Mr. QUIN. Then my friend, Brother Miller, stated at the outset that this plant could not produce more than one-thirtieth or one-fortieth of all the fertilizer in the United States. That can not be true, can it?

Mr. MAYO. I think he is mistaken in the way he figures it.

Mr. QUIN. And that the output at this plant would not materially affect the price?

Mr. MAYO. We think it will have a great bearing on the price.

Mr. QUIN. Undoubtedly it will. If these fertilizer people did not think so they would not be objecting to this proposition, would they?

Mr. MAYO. No; I do not believe they would.

Mr. QUIN. They have never objected to me going into any business I wanted to because they know I could not hurt them. The real fight here has been around this Alabama Power Co. plant, the company claiming to have a certain contract with the Government. Have you a copy of that contract with you?

Mr. MAYO. No, sir; I have not.

Mr. QUIN. They claim that this Warrior plant, which is 88 miles away from the nitrate plant No. 2, is theirs. Is it really necessary for Mr. Ford to have that Warrior plant and the transmission line that is involved in that?

Mr. MAYO. It is the cheapest source of steam power he could get. It is much cheaper than the steam plant at No. 2 nitrate plant, due to the fact that you do not have to transport your coal there.

Mr. QUIN. The coal is already close at hand?

Mr. MAYO. The coal is near the power house at Gorgas.

Mr. QUIN. That territory in Alabama adjacent to and within reasonable transportation distance from the Muscle Shoals dam has iron, coke, coal, limestone, and phosphorus, has it not?

Mr. MAYO. It has all but the coke.

Mr. QUIN. They have not any coke down there?

Mr. MAYO. No, sir.

Mr. QUIN. Mr. Ford can make the coke, can he not?

Mr. MAYO. I think so.

Mr. QUIN. If he can make anything else, he can make the coke. Then they have everything in that territory that is necessary to successfully operate a fertilizer factory?

Mr. MAYO. Practically so; yes, sir.

Mr. QUIN. How much nitrogen is there over every square yard of ground?

Mr. MAYO. About 7 tons.

Mr. QUIN. Some of these folks must have a fear that taking nitrogen out of the air is going to hurt the health of the people. There is no danger in that, is there?

Mr. MAYO. No, sir.

Mr. QUIN. Mr. Crowther suggested the other day that all of us farmers seem to believe we are going to have big funnels through which we will bring the nitrogen out of the air. Then he seemed to think that we thought we would get it out of the air and have it come down through the funnel, and get it in that way. But it has not hurt the air so far, has it, to take the nitrogen out of the air? It has not affected the health of the people, and it has had no deleterious effect on the agricultural plants of the farmers in that territory, has it?

Mr. MAYO. No, sir.

Mr. QUIN. That is one of the things I have been expecting them to jump at. Mr. Mayo, did you notice the vote of Congress by which it was decided not to complete this dam at the time we failed to provide for its completion, after the war was over?

Mr. MAYO. No; I did not.

Mr. QUIN. Some able gentleman stated that the reason the Government could not complete this project was because it cost them too much money down there, with the use of this fine water power, to make this nitrogen. Some of them objected to this, and the Secretary of War said that if Mr. Ford could make this fertilizer cheap enough, and they could get a 50-year lease, he would not oppose it. That is the substance of what he said. You believe that through the processes that would be put into operation Mr. Ford can make this fertilizer cheap enough, do you not?

Mr. MAYO. I am sure of it.

Mr. QUIN. And not only would make that plant a success, but would force down the price of the fertilizer throughout the United States?

Mr. MAYO. We hope so.

Mr. QUIN. Competition will always do that?

Mr. MAYO. Yes, sir.

Mr. QUIN. Some gentleman suggested that these foreign imports might get the price of fertilizer so low that Mr. Ford could not afford to operate down there. They never have done that; there is no danger of that, is there?

Mr. MAYO. We do not think so.

Mr. QUIN. If it did it, would it not be a great boon and blessing to the farmers of the United States if they could get the foreigners to put it in here cheaper even than Mr. Ford is going to make it?

Mr. MAYO. Yes, sir.

(Thereupon, a recess was taken until 2 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF MR. WILLIAM B. MAYO—Resumed.

The CHAIRMAN. Mr. Mayo, when we took a recess Mr. Quin was proceeding with his questioning of you. He will now continue.

Mr. QUIN. Mr. Mayo, then there is no doubt but what the cost of fertilizer to the ultimate consumer will be greatly decreased in price?

Mr. MAYO. No doubt in my opinion, sir.

Mr. QUIN. After the completion of Dam No. 2 and Dam No. 3 there will be a natural increase in the navigation of the streams, will there not?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then, if Mr. Ford puts in other dams, that would still increase the navigation of those streams?

Mr. MAYO. Yes, sir.

Mr. QUIN. And that would make an outlet from the remotest part that would be navigable into the Ohio River, would it not?

Mr. MAYO. I think so.

Mr. QUIN. Steamboats and barges could carry the product from Muscle Shoals into the Ohio River, thence into the Mississippi, clear to the Gulf of Mexico, and then up above as far as navigation would permit?

Mr. MAYO. Yes, sir.

Mr. QUIN. It would increase, then, the amount of navigation sufficiently to justify the Government, from the standpoint of navigation alone, in completing those dams, would it not?

Mr. MAYO. I think so, but I do not want to go into tonnage figures.

Mr. QUIN. Gen. Beach, the Chief of Engineers of the War Department, testified it would cost eight or ten million dollars to clean out the Muscle Shoals stretch, not considering the dams.

Mr. MAYO. Yes, sir.

Mr. QUIN. Then, the construction of these dams will add about 850,000 horsepower, both primary and secondary combined, would it not?

Mr. MAYO. Yes.

Mr. QUIN. And the other dams contemplated by Mr. Ford, if he succeeds in this industry, will create a large amount of horsepower at those points, will they not?

Mr. MAYO. Yes, sir.

Mr. QUIN. It is fair to assume that with the cheap water power at those points the cost of manufacture of farm implements could be greatly reduced, could it not?

Mr. MAYO. I would say so.

Mr. QUIN. All kinds of plows, harrows, binders, reapers, mowers, and everything, in fact, that it takes to till the soil?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then, that point could be made, and no doubt will be made, under Mr. Ford's direction the great creative point for the fertilizer for the soil and for the implements to cultivate the soil with.

Mr. MAYO. We hope so.

Mr. QUIN. He has already created for the farmer the tractor, has he not?

Mr. MAYO. Yes, sir.

Mr. QUIN. At a very moderate cost to the farmer.

Mr. GREENE. Mr. Quin, will you pardon me for asking you a question? Do you mean to say he is going to manufacture all these farming implements down there; is that your idea?

Mr. QUIN. I think that he is going to follow in the course of time when he gets it; either Mr. Ford or somebody else.

Mr. GREENE. I was somewhat late and I just wanted to know whether that was the line along which you are questioning the witness.

Mr. QUIN. Yes. There will be these incidental factories in connection with this horsepower that the Government has down there now.

The CHAIRMAN. The witness testified yesterday that he was going to take plant No. 1 and use it in conjunction with the manufacture of automobiles.

Mr. QUIN. Well, that is a good thing. We have the five-passenger Ford touring car now selling f. o. b. factory at $345, have we not?

Mr. MAYO. Yes, sir.

Mr. QUIN. Would not the farmer be able to take that automobile and put a trailer on it and haul this fertilizer out to his farm at a small cost?

Mr. MAYO. Yes, sir.

Mr. QUIN. And he could haul the products of his farm back to the local shipping point at a small cost?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then if he gets his farm implements at a cost in proportion to the cost of the Ford touring car and the Ford tractor, it will mean the saving of many millions of dollars a year to the farmers of the United States, will it not?

Mr. MAYO. Yes, sir.

Mr. QUIN. Mr. Miller in discussing the unit value of this horsepower overlooked the point of navigation that the Government gets out of it; he further overlooked the saving to the people of the United States in fertilizer alone; he further overlooked the contemplated features that may come to the farmers and other masses of the American people. If 8,000,000 tons of fertilizer are used a year, and its cost to the farmer is reduced about one-half of the cost at which they are getting it now, will not that be equal to all this supposed horsepower that Mr. Miller is valuing against this proposition?

Mr. MAYO. I do not know how it would balance up, but it would surely make a great saving.

Mr. QUIN. This Warrior plant that was constructed by the Alabama Power Co. is what type of industry? What is it, just a power plant of steam or water?

Mr. MAYO. Steam.

Mr. QUIN. A steam power plant?

Mr. MAYO. Yes, sir.

Mr. QUIN. Under their contract with the Government they were to charge 6½ mills per kilowatt, I believe.

Mr. MAYO. I think it is 6½.

Mr. QUIN. The Alabama Power Co. is owned by the Alabama Traction, Light & Power Co. (Ltd.), of the Dominion of Canada; in other words, controlled by an alien corporation, citizens of Great Britain.

The CHAIRMAN. Did the witness answer that?

Mr. MAYO. No, sir; I did not answer it. I do not know.

Mr. QUIN. That is a matter of record. Congress knows that and it is reported in the reports that the War Expenditures Committee made upon investigating that question.

Mr. CROWTHER. Can we not have that printed? Do you know where that appears?

Mr. QUIN. I am putting it in the record now. I would be glad to put in the report of Mr. Graham and his examination, and Mr. Garrett's examination, if you want it.

This Alabama Power Co., owned and controlled by the citizens of Great Britain and that being an alien corporation that directly controls the Alabama Power Co., under the purported contract I asked you about before noon, would have control of this immense water power and also the Government's nitrate plant No. 2 at Muscle Shoals, would it not?

Mr. MAYO. I do not quite follow you. You mean if they kept their plant?

Mr. QUIN. Yes; if the Government was forced to keep this alleged contract with that corporation.

Mr. MAYO. No; as I look at it, they would simply have a source of power to the extent of 30,000 kilowatts.

Mr. QUIN. Mr. Ford's proposition proposes to keep and will keep the nitrate plant for the purpose of making nitrates for the Government in time of emergency or in time of war, ready at all times.

Mr. MAYO. Yes, sir.

Mr. QUIN. The maximum capacity of that plant now is 110,000 tons per annum.

Mr. MAYO. Yes, sir; of ammonium nitrate.

Mr. QUIN. Mr. Ford's proposition includes the transmission line and the Warrior plant?

Mr. MAYO. Yes, sir.

Mr. QUIN. Then he expects the United States Government to nullify that existing, alleged contract, and proceed by condemnation proceedings or otherwise to give title to Mr. Ford?

Mr. MAYO. He simply asks the title of it.

Mr. QUIN. Some gentlemen seem to think that would be a very hard thing to do, but I do not.

Mr. MAYO. We do not think so.

Mr. QUIN. I believe the circumstances surrounding the contract made with this corporation, controlled and directed by a corporation of the Dominion of Canada would not be held by any respectable court in this country to be binding on the United States. The fact of it is that when I think of the terms and conditions and the circumstances under which they were imposed on this Government, a bad polecatty odor passes by my nostrils.

Mr. Mayo, how far, if you have estimated it, would navigation be increased by the proposed dams?

Mr. MAYO. About 90 miles.

The CHAIRMAN. That is the evidence before the committee, about 90 miles.

Mr. FISHER. Is it your judgment that the operation of nitrate plant No. 2 by Mr. Ford under the terms of the contract would bring about a material reduction in the cost of fertilizer to the farmers of this country.

Mr. MAYO. Yes, sir.

Mr. FISHER. Just what is the exact figure, as estimated, if you have it before you, as to the value to the Federal Government of a plant, just as nitrate plant No. 2 would be, when operated according to section 16 of the contract; could you give some estimate of what the value would be to the Government?

Mr. MAYO. Mr. Williams's report states the amount as $11,000,000, which appears reasonable.

Mr. FISHER. Have you made the investigations relative to the manufacture of fertilizer recently, within the last three or four months?

Mr. MAYO. We are making investigations right along and have been ever since we made the first offer seven months ago.

Mr. WRIGHT. Mr. Mayo, first of all, I want to ask you some questions with reference to the figures suggested by Mr. Miller. I will get you to first explain to the committee the difference between primary and secondary horsepower.

Mr. MAYO. Primary horsepower is that amount of power which you can get 365 days in the year.

Mr. WRIGHT. Right in that connection, is not that the real power that any water-power company figures on?

Mr. MAYO. That is the power that all water powers are based upon.

Mr. WRIGHT. That is the substantial, normal, continuous power which they get the year around?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. And it is the only kind that most manufacturers or industrial companies would want to buy, because they want it every day in the year except Sunday?

Mr. MAYO. They must have it regularly.

Mr. WRIGHT. What is secondary power?

Mr. MAYO. Secondary power is that power which is in excess of the primary power, which goes and comes due to the flow of the river; that is, which changes with the change in the flow.

Mr. WRIGHT. Mr. Miller asked you about the maximum secondary power, did he not?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. That these plants were capable of producing?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Do you understand that that means that 365 days in the year there will be that much secondary horsepower available?

Mr. MAYO. It may only be 30 days.

Mr. WRIGHT. It may be only 30 days in the entire year?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. So that it is extremely difficult to dispose of that secondary power, is it not?

Mr. MAYO. Practically impossible.

Mr. WRIGHT. He estimated that would be worth $6 a horsepower?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. His figures contemplated it would bring that the year around?

Mr. MAYO. Yes, sir; I so understood it.

Mr. WRIGHT. As a matter of fact, the secondary horsepower would be figured liberally if you estimated it at one-third of the price of the primary power, would it not?

Mr. MAYO. I would say so.

Mr. WRIGHT. And then, would it not be sound, conservative business judgment to again divide that by three as what you might ultimately get out of the secondary power?

Mr. MAYO. That is my opinion.

Mr. WRIGHT. So that it all depends on the figures presented as to what the ultimate result is.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. In other words, you have heard of the man who figured on a little sawmill. He figured that he could produce 10,000 square feet of lumber a day, which would bring him on the market $1,000, and that he could buy that timber standing for $50, and he figured he would have a net profit of $950, failing to take into account the overhead, the expense of logging to the mill, the expense of maintenance, and the expense of labor.

Mr. MAYO. And whether he could get it all to the mill or not, and then sell it.

Mr. WRIGHT. Yes. Mr. Miller further figures against the interest charges that the Government would receive from Mr. Ford or his company and the amounts for maintenance of the dams, etc., this approximated value that Mr. Ford would get for the primary and secondary power, does he not?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Without taking into account what it would cost to produce that power?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Or whether there would be a market for it or not. There are various contingencies attending any enterprise, are there not, Mr. Mayo?

Mr. MAYO. We have found it so.

Mr. WRIGHT. You know how that gentleman came out who made the calculation on the sawmill. He said that he broke so badly that he could not have paid his debts if he had had the money.

Now, Mr. Mayo, would you object to giving to the committee your view of the advantages of a 100-year lease rather than a 50-year lease, and why a long lease would be necessary at this particular plant?

Mr. MAYO. Well, on account of the size of the project and the immense amount of capital necessary to develop it to such an extent that we can use all the power, Mr. Ford felt that in 50 years he would perhaps only have made a good start.

Mr. WRIGHT. First of all, you would have to take into account the time that would be required to equip these plants, complete the dams, and install the power houses and the apparatus?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. What would be the next element of delay in using the power—would you not have to develop industries?

Mr. MAYO. We would have to develop industries to consume it; yes, sir.

Mr. WRIGHT. And you figured 15 to 20 years would be required in doing that?

Mr. MAYO. Probably.

Mr. WRIGHT. Are there any other elements that would argue in favor of a long lease, from Mr. Ford's standpoint?

Mr. MAYO. It would give him a good chance to make part of the secondary power primary.

Mr. WRIGHT. In other words, if he had some industry right there on the ground that might stand idle part of the time and be run part of the time with some profit, he could utilize at least some of this secondary power.

Mr. MAYO. Yes; and it would give him time to develop other dams up the river and increase the primary or secondary power.

Mr. WRIGHT. That would inevitably result in an increase in primary power—the construction of other dams above there?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Tell the committee why that would be true?

Mr. MAYO. It increases the pondage and storage capacity available for regulating the flow of the river.

Mr. WRIGHT. The storage of the water?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. And instead of its going to waste, it is stored or impounded.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Speaking about interest, if it is true that the Government has already expended on these projects, in round numbers $105,000,000, is not that amount lying there idle today, except for the small amount the Government may be receiving from the Alabama Power Co. for some of this power?

Mr. MAYO. That is as I understand it; yes, sir.

Mr. WRIGHT. What would be the annual interest at 4 per cent on $105,000,000? Of course that is a matter of calculation, and it would be $4,200,000, would it not?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Is not the Government losing that?

Mr. MAYO. It strikes me so.

Mr. WRIGHT. In addition to that, is there not necessarily a heavy charge in maintaining or watching this property and keeping guard over it?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. That would amount to several hundred thousand dollars a year.

Mr. MAYO. Around $750,000 a year.

Mr. WRIGHT. Then in addition to that, Mr. Mayo, is it not true that any plant, especially this nitrate plant No. 2, which is kept in a standby or idle condition, will deteriorate very rapidly.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. And finally rust out?

Mr. MAYO. The Ordnance Department has figured it on a 5 per cent annual depreciation basis.

Mr. WRIGHT. So that all of those elements would enter into the amount the Government is now losing.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Mr. Mayo, on yesterday this clause in the proposal of Mr. Ford was touched upon. It is the clause which obligates Mr. Ford to maintain and operate nitrate plant No. 2 during the life of this proposed contract.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Can you turn to that section—section 14, is it not?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. I want to call your attention to the language employed there:

"The company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control," etc.

Now, do you not understand from that provision that Mr. Ford would be bound during the entire 100-year period to produce something which was equivalent to 110,000 tons of ammonium nitrate per annum.

Mr. MAYO. I do.

Mr. WRIGHT. Something which would contain that much fertilizer properties?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. At this nitrate plant No. 2?

Mr. MAYO. That is the intent.

Mr. WRIGHT. Although the form of producing might change or the method might change?

Mr. MAYO. We expect it would.

Mr. WRIGHT. He would be bound to employ something there that would produce the equivalent of this 110,000 tons.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. You were asked, if that could not be done at a profit, whether Mr. Ford would be bound to continue under the provisions of section 14 to manufacture this ingredient.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Do you understand that would have anything to do with his obligation to comply with this provision, even if he did have to sustain a little loss?

Mr. MAYO. I think if he were forced to make it at a serious loss that probably the Government would not require him to do it; no.

Mr. WRIGHT. Or he would adopt some other method.

Mr. MAYO. I expect that after he had tried every other method, if he still continued to manufacture at a loss and there was no chance, or it would seem to be beyond human possibility, then he would be relieved of that duty.

Mr. WRIGHT. Do you contemplate any such situation arising?

Mr. MAYO. Certainly not.

Mr. WRIGHT. Now, I want to ask you about the provision here in section 17 of the contract, about which Mr. Hill asked you. Does not that simply mean that at the expiration of the 100-year lease, if the Government does not actually desire to own and operate this plant, but desires to sell it or lease it, that the Ford company will be given the option or the privilege, first, to negotiate with the Government to secure as much power as it may need.

Mr. MAYO. That is the way I take it.

Mr. WRIGHT. And the very words of that provision indicate that the terms will have to be agreed upon.

Mr. MAYO. Yes, sir.

Mr. WRIGHT. Not only the price but the length of time the company might be permitted to use the power.

Mr. MAYO. I would say so; yes, sir.

Mr. WRIGHT. So that is simply an open question, the only thing being that Mr. Ford would have the preference, all other things being equal?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. You were asked by Mr. Parker about the right of Mr. Ford to mortgage or alienate or encumber these properties to which he is to receive title. Of course, we understand he does not get title to Dam No. 2 and Dam No. 3?

Mr. MAYO. No.

Mr. WRIGHT. But the Government is to convey to him all the other properties?

Mr. MAYO. Yes, sir.

Mr. WRIGHT. But it is conveyed in accordance with the terms of this proposal?

Mr. MAYO. That is my understanding.

Mr. WRIGHT. This being a matter of public record that will go into an act of Congress, would not the whole world be charged with notice of the manner in which Mr. Ford held that property?

Mr. MAYO. I would say so.

Mr. WRIGHT. And whether it was put in the deed, in the first instance, and then in the mortgage, would not whoever dealt with Mr. Ford in reference to these properties deal with him in reference to the provisions in this contract?

Mr. MAYO. I should certainly say so.

Mr. WRIGHT. In other words, he could not convey any greater title than he had acquired from the Government?

Mr. MAYO. No, sir.

Mr. WRIGHT. And if he undertook to mortgage or encumber the property in any other way these same provisions would attach to it?

Mr. MAYO. I would say so.

Mr. WRIGHT. I would say so.

Mr. STOLL. Mr. Mayo, under Mr. Ford's offer relative now solely to dams 2 and 3, as I understand it, he requires of the Government three things; the first is to acquire the necessary lands and flowage rights, including land for railroads and terminal connections?

Mr. MAYO. Yes, sir.

Mr. STOLL. Have you estimated what that would cost?

Mr. MAYO. The flowage rights for Dam No. 3 were estimated at a maximum of $1,500,000. The flowage rights and practically all of the railroad rights of way for Dam 2 have already been secured. They go with Dam No. 2.

Mr. STOLL. So that there would be under that item about $1,500,000 required?

Mr. MAYO. There might be a half million dollars more, possibly. There are some leased properties at Dam No. 2 which were never purchased.

Mr. STOLL. The second requirement of the offer on the Government is to repair, operate, and maintain the dams, locks, and gates. For this Mr. Ford offers to pay $35,000 and $20,000, respectively, for dams 2 and 3. Will that be sufficient to operate, repair, and maintain the dams, locks, and gates?

Mr. MAYO. We think it will. That is not including the power houses and its apparatus. That is taken care of under a separate fund.

Mr. STOLL. The third requirement is to furnish the necessary money to complete Dam No. 2 and install the machinery and to build Dam No. 3 and install the necessary machinery. You estimated that, I believe, to cost about $40,000,000.

Mr. MAYO. Yes, sir.

Mr. STOLL. Under Mr. Ford's offer the United States gets very little in return on its investment for the first three years, as was brought out by Mr. Miller's questions.

Mr. MAYO. Yes, sir.

Mr. STOLL. To look at that properly, is it not really a problem in arithmetical progression, does not the Government as the years go by get more by the creation of this sinking fund that Mr. Ford proposes to establish?

Mr. MAYO. The sinking fund finally wipes out the entire cost.

Mr. STOLL. That is what I know, and so I say that as the years go by the Government has a smaller amount invested. For instance, at the end of 20 years, with the sinking fund going to the Government, it would be a smaller investment than the Government had at first.

Mr. MAYO. Yes, sir; that is correct.

Mr. STOLL. And in 50 years it would still be less, and so on until it is finally wiped out.

Mr. MAYO. Yes, sir.

Mr. STOLL. Would it be possible for you to have a table made showing the way that decreases? It may be impracticable to do that; I do not know.

Mr. MAYO. I think that can be very readily done; yes.

Mr. STOLL. I wish you would have that statement put in the record.

Mr. MAYO. All right, sir.

Table illustrating decrease in net investment of Government due to operation of a sinking fund.

Assume: Payments into sinking fund total $46,746 annually, sinking-fund investments to bear 4 per cent interest, payable annually. Government investment taken at $48,000,000.

Life of fund.	Total amount in sinking fund.	Striking a balance at the end of each period the Government's net investment is—
25 years	$2,024,569	$45,975,431
50 years	7,421,862	40,578,138
75 years	21,809,346	26,190,654
90 years	40,250,643	7,749,357
100 years	60,163,271	

NOTE.—If the sinking-fund investments bore interest at 4 per cent payable semiannually, the amount in the sinking fund at the end of 100 years would be $61,973,977. In Mr. Ford's offer the sinking fund for Dam No. 2 runs 94 years and that for Dam No. 3 runs 97 years. The above table is intended simply as an illustration of the amortizing effect of a 4 per cent sinking fund over several periods of years, maintained by annual payments equal to the payments offered by Mr. Ford.

Mr. STOLL. Because the figures as Mr. Miller presented them I do not think carry the correct idea as to the expense the Government is put to in this project under Mr. Ford's offer.

Mr. MAYO. The offsets to the expenses, as I brought up before, are very great during the first few years.

Mr. STOLL. Yes; I understand that; but to my mind, as the years go by, this decreases.

Mr. MAYO. Yes, sir.

Mr. STOLL. The Government gets more return and has less money invested.

Mr. MAYO. The Government's net investment is steadily decreasing.

Mr. STOLL. Do you know how many tons of sulphate of ammonium can be produced under your plan annually?

Mr. MAYO. It all depends. We would have to put in a sulphate plant to make any sulphate of ammonia. We would have to put in a sulphuric acid plant to start with. If we use the same amount of nitrogen that the plant is now equipped for, it runs to 190,000 tons annually.

Mr. STOLL. Under section 19 of Mr. Ford's offer he agrees to enter into a contract to effectuate the purposes of his agreement. Do you understand that to mean he will put in the necessary guaranties that are usually required in business contracts, to do what he promises to do?

Mr. MAYO. What would you term as a guaranty?

Mr. STOLL. First, he binds himself——

Mr. MAYO (interposing). He pays the money. He does not receive title until he pays the purchase price. That would, of course, guarantee the purchase. After that he would have to put in the necessary amount of working capital to make it operative.

Mr. STOLL. I understand, but here is what he says:

"Upon acceptance, the promises, undertakings, and obligations shall be binding upon the United States, and jointly and severally upon the undersigned, his heirs, representatives, and assigns, and the company, its successors, and assigns; and all the necessary contracts, leases, deeds, and other instruments necessary or appropriate to effectuate the purposes of this proposal shall be duly executed," and so on.

He promises to do certain things. Is any guaranty contemplated in the contract? What do you mean by "effectuate"?

Mr. MAYO. The passage of the proper papers and deeds and everything that go with settling the titles. Did you have in mind a bond or something of that sort?

Mr. STOLL. I did not know a bond or paid-up capital or something that would make it a real business contract.

Mr. MAYO. The amount of the purchase price, the amount of money that has to be put in as working capital to start with, I think is a sufficient guaranty.

Mr. STOLL. But this is silent as to what that would be.

Mr. MAYO. It is silent because it is problematical how much it will take.

Mr. STOLL. I understand. I am not complaining about the offer as it stands, but I am speaking of how it will be consummated. Do you not think something ought to be in there more definite than that.

Mr. MAYO. I do not think so.

Mr. STOLL. You think that is sufficient.

Mr. MAYO. He has to carry out the terms of that contract, and when he does he at least has to operate the nitrate plant No. 2 at full capacity, which will require sufficient added capital to have plenty to reimburse the Government for any breach of contract.

Mr. STOLL. Do you think it probable that Mr. Ford will increase the production of fertilizer over the present capacity of plant No. 2.

Mr. MAYO. I think it is very probable.

Mr. STOLL. And it is his intention, of course, to give the consumers the benefit of the cheap power.

Mr. MAYO. Yes, sir.

Mr. STOLL. What will be saved by the Government in constructing Dams Nos. 2 and 3 if the work is done by Mr. Ford without any profit to himself rather than if they follow the usual plan.

Mr. MAYO. We were of the opinion it could be done much quicker on account of not being bound up with the ordinary governmental red tape, and he could also handle the contracts to much better advantage as a private party instead of as the Government.

Mr. STOLL. And there would be considerable saving in money?

Mr. MAYO. Yes, sir; both money and time.

Mr. STOLL. Do you have any idea of how much that would amount to, unless that is shown by the estimates made by the Engineers and by you? Is that a fair estimate of what the saving will be?

Mr. MAYO. That is a fair estimate. That is a difference of approximately $16,000,000.

Mr. STOLL. Is there any way you could use or sell the maximum horsepower for the first few years of operation at Muscle Shoals?

Mr. MAYO. No, sir; no possible way.

Mr. STOLL. You would have to develop the business to use it?

Mr. MAYO. Yes, sir.

Mr. STOLL. Following Mr. Miller's questions asked you on yesterday, did you prepare any figures?

Mr. MAYO. We prepared a sheet of figures; yes, sir.

Mr. STOLL. Relative to what?

Mr. MAYO. Relative to the cost to the Government and the credits during the first six years.

Mr. STOLL. I would like to have that put in the record.

Mr. MAYO. All right, sir.

Mr. STOLL. Would you mind reading it?

The CHAIRMAN. I was just going to say that probably it is short and could be read.

Mr. MAYO. It is not very long.

(The statement which Mr. Mayo read is as follows:)

Government balance sheet at Muscle Shoals during first 6 years of Ford lease of Dam No. 2.

[Assume, as stated by Secretary Weeks, that the net revenue from leases of steam plants pays the cost of maintenance of nitrate properties.]

Items.[1]		Debit.	Credit.
Interest during construction:			
Account Dam No. 2	$1,393,800		
Account Dam No. 3	1,480,000	$2,873,800	
Interest on Government investment during first 6 years of Ford lease of Dam No. 2:			
Account Dam No. 2	4,646,000		
Account Dam No. 3	3,040,000	7,686,000	
Payments by Mr. Ford, first 6 years of Ford lease of Dam No. 2:			
Account Dam No. 2, 6 payments at $200,000	1,200,000		
Account Dam No. 3—			
3 payments at $160,000	$480,000		
2 payments at $760,000	1,520,000	2,000,000	
Depreciation on nitrate plant No. 2 for 7 years [2] at $2,350,000 (see letter of Maj. J. H. Burns to Congressman Fields, Feb. 6, 1922)			$3,200,000
			16,450,000
Total		10,559,800	19,650,000

[1] For details regarding interest figures see p. 248.

[2] Since the Ford lease of Dam No. 2 begins when the first 100,000 horsepower is installed, and since it is estimated that there will be one year construction period prior to the installation of 100,000 horsepower at Dam No. 2, there will be a 7-year period of depreciation of nitrate plant No. 2, which is assumed by Mr. Ford and must be carried by him prior to the expiration of the first 6 years of the Ford lease of Dam No. 2.

NOTE.—Ordnance Department figures depreciation on nitrate plant No. 2, 5 per cent.

Mr. STOLL. Mr. Mayo, have you ever seen the Gorgas steam plant?

Mr. MAYO. I have not; no, sir.

Mr. GARRETT. Mr. Mayo, I want to get a little more specific information in regard to this fertilizer. In this contract you agree to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control. I want to get in figures

now the number of finished tons of fertilizer ready for use by the farmer that that would be equivalent to per annum.

Mr. MAYO. That depends, of course, upon the process you use, the kind of fertilizer you are making, and the percentage of plant food.

Mr. GARRETT. Well, we will say you are making a tobacco grower; how many tons of average tobacco grower, about a 2-4-8 compound or something like that?

Mr. MAYO. You are getting me kind of astray, because I do not know much about tobacco growing. I know a little about smoking. What percentage of nitrogen would you want?

Mr. GARRETT. I would want 2 per cent of nitrogen and the other ingredients in the usual proportions in such compounds, 4 per cent and 8 per cent.

Mr. MAYO. It would run almost 2,000,000 tons with 2 per cent nitrogen.

Mr. GARRETT. The 2,000,000 tons of average tobacco grower is distributed over the country by the other companies. That would be about 2,000,000 tons per annum?

Mr. MAYO. Yes, sir.

Mr. GARRETT. There has been a good deal said here about whether or not Mr. Ford or his company would continue to manufacture this fertilizer in the event he could not do so profitably. There is nothing in this contract about excusing Mr. Ford from making fertilizer whether he is making it profitably or unprofitably. The only limit in here that I find is that he agrees to make it and not charge more than 8 per cent profit.

Mr. MAYO. Yes, sir.

Mr. GARRETT. Where does the idea spring that Mr. Ford, with the single exceptions pointed out here, that is being prevented by strikes, fires, accidents, or other causes beyond his control, etc., that there is anything in there that would relieve Mr. Ford from making fertilizer at the rate of 2,000,000 tons per year of the finished product, if he was not making it at a profit, but simply making it for cost or below cost?

Mr. MAYO. Oh, I think if he was only making it at cost, he would have to continue.

Mr. GARRETT. Where is he excused from this condition, if it is below cost, according to this contract?

Mr. MAYO. You can not do the impossible.

Mr. GARRETT. Suppose he should not make a profit for one year, the conditions might change in another year, do you not think there should be some construction of that contract as to just what it means. If he should operate at a loss for one year, could he discontinue the manufacture of fertilizer?

Mr. MAYO. I do not think he could, sir.

Mr. GARRETT. That is a very essential thing in this investigation, Mr. Mayo.

Mr. MAYO. I realize that.

Mr. GARRETT. You have developed about the power and what that means and what it means to the Government to have plant No. 2 maintained there for military purposes. All that has been gone into, but you have not got the facts in the record just like I would like to see them in the record on this fertilizer question.

Mr. MAYO. As we look at it, Mr. Ford would not be excused until he had exhausted every known effort to make cheap fertilizer, using any reasonably good process.

Mr. GARRETT. You stated in answer to a question by some gentleman here this morning that you thought he could make fertilizer 50 per cent cheaper than it is being made to-day.

Mr. MAYO. We think so; yes, sir.

Mr. GARRETT. On what do you base that statement.

Mr. MAYO. Well, we base that on a number of processes, any one of which we may adopt.

Mr. GARRETT. You mean that you have in mind processes for the manufacture of fertilizer that have not yet been developed by any of the other companies?

Mr. MAYO. Yes, sir; or partly developed by some of them.

Mr. GARRETT. What I want to get at is this: Regardless of that, because that is something we do not know about now, but we do know that fertilizer is being made, and how it is being made, and how it is being distributed now.

Mr. MAYO. Yes, sir.

Mr. GARETT. And what I want to get in the record is how much cheaper can Mr. Ford, in your opinion, make the fertilizer at this plant, if the Government

accepts his offer, at the rate of about 2,000,000 tons per year than it is now being made generally throughout the country.

Mr. MAYO. Of course, we are green at the fertilizer business, and I could not exactly say, but Mr. Washburn, in his statement, said he thought it could be made there at about one-half the price.

Mr. GARRETT. Do you think you would be safe in saying to the committee, as the spokesman of Mr. Ford, that it would be made 33⅓ per cent cheaper than it is being made and distributed to the farmer now?

Mr. MAYO. Yes, sir.

Mr. GARRETT. And of equally good quality?

Mr. MAYO. I think it is perfectly safe to figure on that.

Mr. GARRETT. If your plant makes about 2,000,000 tons of finished fertilizer, speaking in round numbers, and there is only about seven and a half or eight million tons consumed in the country, you would control at that plant about one-third or one-fourth, at least, of the total output of fertilizer in the United States, would you not?

Mr. MAYO. If the rest of the country stood still, we would; yes, sir.

Mr. GARRETT. And if the rest of the country moves on, you would move at the same pace that they did; so that your proposition now, as I understand it, on the fertilizer question, is that you will make as much finished fertilizer as will be equal to something like one-fourth of the present output in the United States, and that you believe you can represent to this committee that you will make it 33⅓ per cent cheaper and get it to the farmer 33⅓ per cent cheaper than it is now being gotten to the farmers in this country.

Mr. MAYO. Yes, sir.

Mr. HULL. Mr. Mayo, as I stated to you before, the big, compelling thing in this contract is in section 14:

"(*b*) To maintain nitrate plant No. 2 in its present state of readiness, or its equivalent, for immediate operation in the manufacture of materials necessary in time of war for the production of explosives."

I am not a lawyer and I may be wrong, but I think that the lawyers would say that that would be a condition that would have to go in the deed in order to make it binding on the company in the future. If the lawyers said that it was necessary, would there be any objection on your part or on the part of your company to placing that in the deed as a condition of the deed?

Mr. MAYO. I do not think there would be any objection.

Mr. GREENE. Following the replies you gave to Mr. Garrett, of course, as a business man you would not hold that your present statement as to the proportion of fertilizer that you could furnish would be likely to hold good through a century of development in this country?

Mr. MAYO. No, sir; you can not tell how the quantity would change. It would change with the processes.

Mr. GREENE. In other words, you may furnish 20 per cent of the total production of the country with the maximum output of this plant to-day if the base holds at the same figure of total production for the country, but if, as is quite probable, the country resorts more and more to intense fertilization as the century goes on, it would be more difficult for you to keep up the same relative proportion of fertilizer to the total, would it not?

Mr. MAYO. I do not think so; no.

Mr. GREENE. You think you can bring the capacity of that plant up to that proportion and maintain it?

Mr. MAYO. I am of the opinion that if the demand would require it Mr. Ford might possibly double up the plant.

Mr. GREENE. With the same power?

Mr. MAYO. Yes, sir.

Mr. GREENE. You think, then, that there is a reasonable expectation that you could hold to about the same relative production as compared with the total now?

Mr. MAYO. My opinion is that Mr. Ford has only stated his minimum amounts here.

Mr. GREENE. This morning Mr. Hill was inquiring about your interpretation of section 15, as to the right you had to the use of power after the expiration of the 100-year lease.

Mr. MAYO. Yes, sir.

Mr. GREENE. Mr. Hill suggested that in the century to come it was possible that the public policy of the United States might change with regard to the ownership of these natural resources and public utilities and things of that

kind and that we might adopt the policy of either owning or controlling all the water powers. In that case, what would you say of such a public policy that had already mortgaged the Government to give away certain power to one certain concern, no matter what the other demands of the other people and the other agencies throughout the country might be; the Government was held in perpetuity to give one certain concern, one certain power. Do you regard that as very good public policy?

Mr. MAYO. I do. I think it would be entirely unfair to Mr. Ford to have very extensive operations all built up to consume this power and then have it taken away from him.

Mr. GREENE. Mr. Ford is presumed, of course, in his own interests, to have so provided in this contract that he gets back what he puts in in the course of the century, but the Government is entirely a different proposition from an individual investor, because the Government is the guardian of the interests of the Nation as a whole for all time. I appreciate that this proposition is a matter somewhat close to your professional interets, and I do not want to ask any improper questions, but would you think, as a matter of public policy, this Nation, through its Government, should bind itself for all time, no matter what the future might develop as the necessary changes in public policy, so that one specific water power should always go to a certain identified concern?

Mr. MAYO. I think so, when that one concern was the means of building it up and bringing it into the condition it was or might be in at that time.

Mr. GREENE. Would that, then, justify the people who opened and owned and developed the coal mines to have a perpetual right to their use and their product even though the Government a century from now took over the operation of such public utilities?

Mr. MAYO. If the Government took over the Ford plant as well as the water power it would be quite another thing.

Mr. GREENE. I am simply suggesting, as I did yesterday, in questioning you, the possibility of tremendous revolutionary changes in public policy within the century. I dare say nobody here at this table or in this room now approves of the idea of public ownership and control of these natural resources, but we do know that it is quite within the possibilities, and it is already being urged and has been for a good many generations, for that matter, and a century might see a complete change. We are custodians of the property of the people of the United States, and to that extent the custodians of their future. Would we be justified in so tying up the future that our children's children back into several further degrees might not dispose of their own property because a dead hand had tied it up for them?

Mr. MAYO. I think the Government has every right to dispose of it as though this contract did not exist, in so far as price goes.

Mr. GREENE. I am not talking about price; I am talking about the actual control of the administration of the power. The price is immaterial to that.

Mr. MAYO. It plainly says, "Terms that may then be agreed upon."

Mr. GREENE. When people who are lawyers, and probably it is not necessary for me to say that I am not a lawyer——

Mr. MAYO. I am not, either.

Mr. GREENE. I am a layman and read this only as the English language would suggest and not as a lawyer would read it. It seems to me, as it did to my friend, Mr. Hill, this morning, that there are two statements in this paragraph which may be taken up separately and considered, and if the English language means what has been written down here, it does seem to me that upon the failure of a lease or a sale, Mr. Ford has the first right to the power that is developed there. The question of your coming to terms might be enforced by whatever court should decide the case, but he has a prescriptive right on that power.

Mr. MAYO. I think he should have all that he has asked for. I think a man who has the courage he has to make this offer, if he can make a successful run of this plant for 100 years and at that time hand this project back to the Government, cost free, practically, he should at least have a preferential right to get the power at the same going price that anybody else would get it.

Mr. GREENE. Now, Mr. Mayo, this question is suggested merely in our common interests as citizens.

Mr. MAYO. Yes; that is my personal opinion.

Mr. GREENE. And we are approaching it from that point of view. Mr. Ford and the public to-day may be well disposed toward one another, as doubtless

they are, and there may be great and immediate practical benefits to all the country in the Government accepting Mr. Ford's offer under present-day conditions. Those conditions may more or less continue throughout the generation and possibly the generation to follow, and yet Mr. Ford will be gone and all of these people who consent with us to-day to this contract are all gone and an entirely new economic and sociological situation confront their grandchildren, all within the century, because we are still a pioneering civilization in a continent which even physically is still being pioneered.

Now, all at once, those people are confronted with new economic conditions and with entirely new social relationships which perhaps we can not conceive, but we know that what we live in now is a tremendous advance over what our own grandfathers had on this very soil. Those people suddenly find that the policy of the Government is to administer these natural resources and these public utilities in its own hands, and it may do so with respect to all the water power in the land except one, and that one is bound up in the hands of this company.

Mr. MAYO. I do not agree with you on that, because there are a number of other water powers with perpetual rights.

Mr. GREENE. But they are now in private ownership.

Mr. MAYO. Yes.

Mr. GREENE. I am speaking about the water powers that Uncle Sam owns and controls.

Mr. MAYO. Yes.

Mr. GREENE. Would you think, as a matter of public policy, it was desirable notwithstanding the immediate benefits to be gained by this arrangement, which I am not arguing at all, or the benefits perhaps for a generation or two, still, as a matter of public policy, do you think we should commit the Government beyond the lifetime of three generations and beyond a century—in perpetuity?

Mr. MAYO. Well, I will come back to my former statement and say that if the development is such at the expiration of 100 years the company is consuming all the power (and, of course, it only has a chance to get what it does consume on an average during the last 10 years), and if the conditions are such, for the sake of the argument, that a vast investment had been made, nothing should happen to take that power away from the plants and wreck that big development.

Mr. GREENE. I think I will not prolong the discussion of the matter, because it is simply a question, you realize, that will be dwelt upon from the very nature of things by and by, and I think the people will be more likely, if you will permit me, Mr. Mayo, to regard it as a matter of principle rather than a confusion of identities and property interests. It does not make any difference who did own it or the antecedents of the owner, the presumption is that if this is a reasonably successful business speculation or investment, it will have repaid for itself several times, so that the people who may own this power 100 years from now will have made no original outlay from their own pockets and will have nothing to recoup themselves for on account of the original investment because that will have been paid back long, long before.

Mr. MAYO. Yes, that may all be true, yet it might be that at that very period when there might be a new set of owners who have had their money invested only a few years.

Mr. GREENE. Exactly; and the people who conceived this thing, assuming that Mr. Ford should carry out his original intention, would be gathered to their fathers many, many decades, and the people who come on later do not partake of the original, personal element engaged in this thing at all, but are mere automatic heirs in some way, either by law or by birth and descent, of certain property, which they never had a part in forming, and they find that they can stand out against the whole Government of the United States with a prescriptive right that no power on earth can take away from them in the use of certain water power; is that your interpretation?

Mr. MAYO. I think you put it in more or less of an arbitrary light. A great deal of thought was given in drawing that particular paragraph, and it was tried to be drawn in a fair form. The line of thought that was used was that this project can not continue without being successful, and if so, it should be a continually growing one, and if so, it should finally absorb all the power, and a contract should never be so drawn that some day, no matter when, somebody should be able to cut its feet right out from under it by robbing it of all its

power. It should at least have the right to continue taking this power at a reasonable rate or the going rate. That was the line of thought it was built upon.

Mr. GREENE. I would suggest that it may be worth inquiring into as to whether Mr. Ford would insist upon that. I think the people themselves, and even those who expect an immediate interest in the thing, and properly so, may well take second thought as to the great principle of public policy involved there, whether when the time comes, properly, when the Government wants to operate its own properties or dispose of them as it may, its hands are not tied by another ghastly hand from the grave, a century back.

Mr. MAYO. Are they tied? Does not this say, "If the Government does not dispose——"

Mr. GREENE. I think the conditions there all run in the interest of Mr. Ford and not one of them in the interest of the Government.

Mr. STOLL. Mr. Greene, may I ask you a question?

Mr. GREENE. Certainly.

Mr. STOLL. It says here, Mr. Greene, that should the United States elect not to operate said plant——

Mr. HILL. That is not the section.

Mr. STOLL. That gives them the power at the end of 100 years to operate the plant.

Mr. GREENE. Oh, certainly; we always have that power.

Mr. STOLL. In case they decided not to operate but determined to lease or to dispose of same, the only two things they could do, if they do not operate it, would be to lease or dispose of it. Then the Ford company shall have a preferred right to do what? Not to take it, but merely to negotiate with the United States for lease or purchase, and upon such terms as may then be agreed upon.

Mr. GREENE. Yes.

Mr. STOLL. If they do not agree or if the Ford offer is not satisfactory to the Government, they do not have to take it.

Mr. GREENE. If you will go to the next sentence, I think Mr. Hill made that plain this morning:

"If the said leases are not renewed or the property covered thereby is not sold to said company, its successors or assigns, any operations or disposal thereof shall not deprive the company, its successors, or assigns of the right to be supplied with electric power at reasonable rates and in amount equal to its needs," and so on.

Mr. STOLL. That gives them a right to purchase the power.

Mr. GREENE. Exactly, and that is what I am referring to.

Mr. STOLL. I did not understand just what you had in mind.

Mr. GREENE. That is exactly what I was referring to, Mr. Stoll, whether the Government, in other words, should not always be at liberty to choose its own customers and whether any man, 100 years in advance, may so tie the Government's hands that when that period arrives the Government may not be able to choose its own customers.

Mr. STOLL. May I ask one question? Can you conceive of a person who would have more right to be supplied with the current at a reasonable rate than the Ford company who had developed it for 100 years?

Mr. GREENE. I do not venture to make any speculation on what may be the relation or rights of any person to this Government 100 years from now.

Mr. STOLL. But as I say, can you conceive of a person who would have more right to it?

Mr. GREENE. Not on the immediate, present basis of economic reasoning, but that may not be the basis 100 years from now, just as our present basis is not that of 100 years back.

Mr. HILL. Will the chairman permit me to interject a question there to Mr. Stoll? Under that section, which is as follows: "If the said leases are not renewed or the property covered thereby is not sold to said company," etc., under that section, if the Government wanted to use the property itself for its own purposes at the end of the 100 years, and the Ford company desired the power itself, the Government could not use its own property.

Mr. STOLL. Oh, yes; because you could not take it from the Government. If the Ford company bought it the Government could take it back.

Mr. HILL. But just read that second clause.

Mr. STOLL. I understand that, but we could not, by any agreement we could draw, deprive the Government of the right to take any property.

Mr. HILL. But this section does so.

Mr. STOLL. Oh, no; it is not meant to be taken in that sense.

The CHAIRMAN. Gentlemen, we are getting into a discussion that we had better carry on in executive session.

Mr. GREENE. I just wanted to be quite certain that I understood just what Mr. Ford's interpretation of that clause is, and you do not think it is against good public policy?

Mr. MAYO. Do you think you understand his intention?

Mr. GREENE. I think I have gathered your impression. If it is not an improper question, may that question be reopened if in the course of this hearing and its results there is some understanding that a redraft may be made of the proposal of Mr. Ford, with his consent, of course; is it possible that that may be reconsidered?

Mr. MAYO. I have stated before that I believe he wants this offer to stand as it is. We are willing at any time to change the verbiage to clarify the meaning.

Mr. GREENE. Let me finally put this question then: You think it is advisable, apart from any relations of Mr. Ford or our present-day conditions, that the Government shall be tied hand and foot to one customer for that particular water power as against the usual prerogative of the Government to deal with each case as it comes up on its own merits at the time, no matter what the idenity of the people may be?

Mr. MAYO. I think it goes without saying that the Government could take it itself at the end of the period.

Mr. GREENE. I do not question the Government's right to come in nor do you, as I understand it.

Mr. MAYO. No, sir.

Mr. GREENE. But the question is, Even though the Government assumes or reassumes the management of the property, it does so only subject to this right of Mr. Ford's company and its successors to take the property?

Mr. MAYO. I think that if the company has handled this property successfully for 100 years and has handed in a retirement fund that wipes out the first cost, it should at least have the preference of purchasing the power that is to be sold.

Mr. GREENE. Then I will simply call your attention, Mr. Mayo, to the fact that you are holding that individual rights may run against the Government, no matter what the future may develop. I think that would be a fair statement of it.

Mr. CROWTHER. Somebody previously testified, Mr. Mayo, as to the authorship of article 15 here, and I do not just remember the answer as to who prepared it. I would like to know who prepared that paragraph. It was suggested at the time that some farm organization prepared article 15, and that you adopted it in the preparation of this proposal, commencing with this language, "In order that the farmers may be supplied with fertilizers at fair prices."

Is not that unusual language to appear in a semilegal document?

Mr. MAYO. We think so.

The CHAIRMAN. I think Col. Hull, of the Judge Advocate General's Department, made that statement.

Mr. CROWTHER. By whom was it prepared?

Mr. MAYO. By representatives of these farm organizations.

Mr. CROWTHER. Those that are mentioned here?

Mr. MAYO. Yes, sir.

Mr. CROWTHER. Then, following that language, did they have anything to do with the preparation of this paragraph 17, because the same language appears in the first three lines of that paragraph which we have just been discussing?

Mr. MAYO. No, sir; they had nothing to do with that.

Mr. CROWTHER. How did that language creep in there?

Mr. MAYO. I do not know.

Mr. CROWTHER. What is the necessity for the language "and the farmers with fertilizers"?

Mr. MAYO. That was put in to show the purpose.

Mr. CROWTHER. That was for advertising purposes largely?

Mr. MAYO. I would not say so.

Mr. CROWTHER. It is a method of propaganda to convey the idea that this is essentially a fertilizer proposition; that is, that is the plan being discussed now?

Mr. MAYO. No, sir; not propaganda.

Mr. CROWTHER. You do not think so?

Mr. MAYO. No, sir.

Mr. CROWTHER. Can you suggest any other idea for the interpolation of that language at that place?

Mr. MAYO. It is to show the intent of what we are trying to do.

Mr. FIELDS. This article 17 that has been discussed was prepared by or submitted to you by the Judge Advocate General's Department, was it not? It was prepared by the Judge Advocate General's Department and the representatives of Mr. Ford?

Mr. MAYO. Yes, sir; that is, they took our offer and revised it.

Mr. FIELDS. And this is the revised form as it came from the Judge Advocate General's Department?

Mr. MAYO. Yes, sir.

Mr. FIELDS. Returning to the question of the probability or the possibility of Mr. Ford discontinuing the manufacture of fertilizer if he should find it was unprofitable—he could not discontinue the production of fertilizer by just locking up the shop and quitting, could he?

Mr. MAYO. No, sir.

Mr. FIELDS. Would he not have to make a showing to the proper authorities and get the necessary relief?

Mr. MAYO. Yes, sir.

Mr. FIELDS. That is your understanding?

Mr. MAYO. Yes, sir; that is my undertsanding.

Mr. FIELDS. I desire to ask you, Mr. Mayo, if Mr. Ford or his representatives, or both, discussed this contract as now before us with Mr. Weeks, the Secretary of War?

Mr. MAYO. Several times; yes, sir.

Mr. FIELDS. Is it your opinion that Mr. Ford emphasized the fact to Mr. Weeks that this is his proposition or was as far as he could go toward meeting his demands.

Mr. MAYO. Yes, sir.

Mr. JAMES. Mr. Mayo, how much money do you expect Mr. Ford will put into this fertilizer plant?

Mr. MAYO. My opinion is it will keep increasing from time to time.

Mr. JAMES. About how much?

Mr. MAYO. To start with?

Mr. JAMES. Yes; to start with.

Mr. MAYO. My guess is that it would amount to some $5,000,000.

Mr. JAMES. How many tons of fertilizer per annum do you think Mr. Ford will distribute to the farmers?

Mr. MAYO. It depends on the kind of fertilizer you make to start with, which, of course, controls the capacity of the plant.

Mr. JAMES. Well, about how much?

Mr. MAYO. I can only answer that by saying the equivalent of 110,000 tons of ammonium nitrate.

Mr. JAMES. About how many tons approximately will that make?

Mr. MAYO. As we said before, almost 2,000,000 tons of complete fertilizer—say a 2–8–2 mixture.

Mr. JAMES. Under the proposition submitted by Mr. Ford, what is the least amount in number of tons of fertilizer that Mr. Ford is bound to manufacture?

Mr. MAYO. What is the least number of tons?

Mr. JAMES. Yes.

Mr. MAYO. That would be the amount, if it was made as it is made at present by other fertilizer manufacturers.

Mr. JAMES. About how many tons under this contract?

Mr. MAYO. Approximately 2,000,000 tons.

Mr. JAMES. Mr. Ford binds himself under this contract to produce the equivalent of 2,000,000 tons of fertilizer per year?

Mr. MAYO. No, sir.

Mr. JAMES. How many tons does he bind himself under his contract?

Mr. MAYO. That all depends on the mixture and whether you carry a filler or not.

Mr. JAMES. About how many; the least number of tons?

Mr. MAYO. In my judgment it would run from a minimum of possibly 200,000 tons up to a maximum of about 2,000,000 tons, depending upon the class of fertilizer, whether it carried a filler or not, and the proportion it did carry, if any.

Mr. JAMES. You consider that under the contract the least number of tons that Mr. Ford would manufacture would be 200,000 tons?

Mr. MAYO. I think so; yes, sir; that is, of sulphate.

Mr. JAMES. What section of the contract is that in? Where you bind yourselves to produce at least a minimum of at least 200,000 tons.

Mr. MAYO. It is in section 14.

Mr. JAMES. What is the language?

Mr. MAYO. That is the equivalent of 110,000 tons of ammonium nitrate annually, "said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum."

Mr. JAMES. That would not bind him to produce fertilizer; that is the equivalent to be used for that purpose.

Mr. MAYO. Fertilizer equivalent to that amount. That is expressed in that manner because the plant was built originally to make ammonium nitrate, and that is based on the amount of nitrogen the plant would produce.

Mr. JAMES. Is there any objection to our making an amendment in the offer providing, in effect, that Mr. Ford guarantees to produce at least 200,000 tons a year?

Mr. MAYO. I think he does guarantee that. I think the present form of guaranty is the best form you can get in there.

Mr. JAMES. Will he object to our rewriting that so that it will be positive that there is a guaranty?

Mr. MAYO. I do not think there would be any objection if it carried out the intent of that paragraph.

Mr. JAMES. It is the intent of Mr. Ford to produce fertilizer itself? Under the terms of the contract there is not any guaranty that general fertilizer will be manufactured.

Mr. MAYO. Oh, yes.

Mr. JAMES. What is the language?

Mr. MAYO. In the production of nitrogen and other fertilizer compounds.

Mr. JAMES. That is not fertilizer, is it?

Mr. MAYO. You do not mean to say it is not a fertilizer; it is not complete fertilizer.

Mr. JAMES. Mr. Ford's proposition, you have said, is that he expects to distribute this fertilizer himself to the farmers through an agency he will create having the fertilizer ready for use?

Mr. MAYO. Yes; I do not think he would have any objection to clarifying the language so that it would mean complete fertilizer.

Mr. MILLER. Mr. Mayo, are we to understand from you that we are to assure our colleagues on the floor of the House that Mr. Ford agrees to make a commercial fertilizer, irrespective of the cost, through the life of the lease, or are we to impart to our colleagues on the floor of the House the information that he is only to produce it if he can produce it profitably?

Mr. MAYO. The only provision that would let him out of having to make it would be the exhausting of every known effort.

Mr. MILLER. Your proposition has this absolutely binding language, without any exceptions or qualifications: "That company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control." Now, we are getting in there a very important exception, providing he can make it at a profit.

Mr. MAYO. That paragraph is there, and it can stand.

Mr. MILLER. Then if that paragraph means what it says it is unequivocably, without any condition whatever, providing that Mr. Ford is to operate nitrate plant No. 2 and put out 110,000 tons of ammonium nitrate, which is a fertilizer element, during every year of the lease period of the 100 years.

Mr. MAYO. He is willing to stand by the paragraph that is there.

Mr. MILLER. Then it is without any equivocation, condition, or exception as to whether it would be a paying proposition or not.

Mr. MAYO. I do not think so.

Mr. MILLER. What does that mean, that he does not have to do it?

Mr. MAYO. In my opinion, he would not have to do it, as I have said before, if he exhausted every known effort, and still could not make it except at a great loss.

Mr. MILLER. He can make it whether he makes it at a loss or not, can he not?

Mr. MAYO. I do not think he could do it very long.

Mr. MILLER. That is like the story of the old clothier who sold goods at a low cost because he sold so many of them. You can make this fertilizer just as well if you make money out of the proposition, or if you can not, so far as the physical manufacture is concerned, but when you approach it from a

financial angle, it is not wholly impossible even from that angle. What we are after is to assure our colleagues on the floor of the House that Mr. Ford's company agrees unequivocally and without condition throughout the time of the lease to produce yearly at that plant 110,000 tons of ammonium nitrate.

Mr. MAYO. It does not seem to me it would be good judgment to try to pass that sort of an idea along. You can not expect the impossible of him. I can best answer the question by saying that he is willing to let the paragraph stand as it is.

Mr. MILLER. Without any condition attached to it. I observed the statement you filed when Mr. Stoll asked you a question. Did you prepare that statement?

Mr. MAYO. Yes; Mr. Waldo and myself together prepared it.

Mr. MILLER. I would like to analyze it because I heard it and I am much interested in it.

Mr. MAYO. That is what it was made for.

Mr. MILLER. Mr. Mayo, how much will be the aggregate amount you will pay in on your amortization fund during the lifetime of your lease? You pay $46,746 a year, do you not? You pay $19,868 on Dam No. 2, semiannually, and you pay $3.505 on Dam No. 3, semiannually.

Mr. MAYO. I think that is right; yes, sir.

Mr. MILLER. So you pay $46,746 per year. The period of your lease is 100 years.

Mr. MAYO. Yes, sir.

Mr. MILLER. If you multiply that amount by 100 you will get how much?

Mr. MAYO. It is approximately four and a half million dollars.

Mr. MILLER. All you pay for your amortization fund for the 100 years is $4,670,600, is it not? You were speaking of the investment of the Government gradually being decreased.

Mr. MAYO. Yes, sir.

Mr. MILLER. In your statement you referred to that. It will be decreased $46,746 a year on a $42,000,000 investment?

Mr. MAYO. Plus the interest?

Mr. MILLER. Plus what interest?

Mr. MAYO. Plus the interest it makes.

Mr. MILLER. Do not compound against the Government. You are compounding against the Government.

Mr. MAYO. I think not; no, sir.

Mr. MILLER. The straight interest you will pay is $46,746 a year for that period?

Mr. MAYO. That is not interest; that is the retirement fund.

Mr. MILLER. Or the amortization fund. That is what I am speaking about.

Mr. MAYO. To be put out at interest.

Mr. MILLER. Yes; but you said it would decrease the amount so much.

Mr. MAYO. I say so again.

Mr. MILLER. It will decrease it $46,746 a year, will it not?

Mr. MAYO. And plus the interest.

Mr. MILLER. If you place that out at compound interest and compound it against the Government, it will amount to $49,000,000 at the expiration of your lease, will it not?

Mr. MAYO. I do not understand the language you use when you say "against the Government."

Mr. MILLER. You are getting the benefit of that compound interest if you amortize this proposition.

Mr. MAYO. Certainly.

Mr. MILLER. And the compounding is against the Government.

Mr. MAYO. I do not so understand it.

Mr. MILLER. It is not against you, is it? You are getting the benefit of it, are you not?

Mr. MAYO. But the Government gets the money.

Mr. MILLER. You are getting the benefit of the compound interest in figuring your amortization fund, are you not?

Mr. MAYO. So is the Government.

Mr. MILLER. I say you are getting the benefit of that?

Mr. MAYO. I am saying so is the Government.

Mr. MILLER. Then, if the Government has that amortization fund equal to the cost of the dam, it is compounding it against itself; there can not be any other interpretation to it.

Mr. MAYO. I can not see it; I may be dense.

Mr. QUIN. Mr. Mayo, the Government is in this business of loaning money to the farmers through the Farm Loan Board, is it not?

Mr. MAYO. So I understand.

Mr. QUIN. Then, this money you pay this Government as a rental or for amortization could ordinarily be loaned to the farmers at 5 per cent, could it not?

Mr. MAYO. I expect so.

Mr. QUIN. They are now crying for money, and the banks can not let them have it. There would be no trouble about investing the funds, would there, after it was paid in?

Mr. MAYO. I do not think so.

Mr. PARKER. Mr. Mayo, referring again to this question of being unable to manufacture profitably, no matter how hard you might try, I find that section 14 says that the company shall operate "except as it may be prevented by strikes, accidents, fires, or other causes beyond its control." Do you mean to say you consider its inability to manufacture profitably a cause beyond its control?

Mr. MAYO. I am not a lawyer, but that is a usual phrase in usual commercial contracts. Mr. Ford stands by that paragraph and is willing to take the consequences.

Mr. PARKER. I again ask the question: Do you consider the inability to manufacture profitably a cause beyond the company's control, under that clause?

Mr. MAYO. I can not definitely say.

Mr. PARKER. It is a very common thing, I believe, to have construction contracts on which money is paid out from time to time to the contractors and the whole thing is funded when the construction is done.

Mr. MAYO. Yes.

Mr. PARKER. Is it not universal that interest is allowed on the moneys paid out in construction when the funding is done and included in the funding?

Mr. MAYO. It all depends on the arrangement.

Mr. PARKER. Is not that the ordinary arrangement?

Mr. MAYO. Well——

Mr. PARKER (interposing). It is to be paid out of a fund in the end?

Mr. MAYO. It is to be paid out of something.

Mr. PARKER. Under those circumstances, interest has to be added upon the amounts paid upon the initial construction?

Mr. MAYO. Yes, sir.

Mr. PARKER. Have you built dams in a limestone country?

Mr. MAYO. We have built small dams in our country, which is a limestone country.

Mr. PARKER. You know the dangers of a dam being undermined? Especially in a limestone country, with hidden channels forming under the limestone.

Mr. MAYO. I think that trouble is liable to occur at the start, if at all.

Mr. PARKER. You do not think it is liable to occur during the hundred years?

Mr. MAYO. I do not think so.

Mr. PARKER. If during the hundred years floods or an earthquake should destroy that dam the Government would have to replace the dam without getting a thing for that security?

Mr. MAYO. Yes, sir.

Mr. HILL. I have just one question I want to ask you, Mr. Mayo, in reference to paragraph 14. If Mr. Ford's company should produce annually 110,000 tons of ammonium nitrate, that would be in full compliance with the contract, would it not?

Mr. MAYO. It is not proposed to make ammonium nitrate at all, as such. That is not a fertilizer ingredient.

Mr. HILL. Let us put it in another way. If Mr. Ford's plant should produce annually nitrogen or other fertilizer compounds equivalent to 110,000 tons of ammonium nitrate per annum, that would be in full compliance with the contract, would it not?

Mr. MAYO. I would say so.

The CHAIRMAN. We are very much obliged to you, Mr. Mayo. You have given us a great deal of very enlightening information.

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Tuesday, February 14, 1922.

STATEMENT OF DR. RICHARD C. TOLMAN, DIRECTOR FIXED NITROGEN RESEARCH LABORATORY, DEPARTMENT OF AGRICULTURE.

Dr. TOLMAN. Mr. Chairman, I represent the fixed nitrogen research laboratory of the Department of Agriculture. We have carried out a large number of investigations as to the best methods of utilizing the Muscle Shoals plant for the manufacture of fertilizer, and I shall be glad to make a statement, if you desire, concerning the kinds of material that can now be manufactured at that plant, the kinds of material that could be manufactured in the future or might be manufactured in the future; then I would like to make a tentative statement as to the commercial possibilities; and then I have an authorized statement from the Secretary of Agriculture as to the attitude of the Department of Agriculture toward the Ford proposition.

The CHAIRMAN. You may proceed in your own way to discuss these questions.

Dr. TOLMAN. The Muscle Shoals plant is now designed to produce two materials, it is designed to produce 220,000 tons of cyanamid per annum, which is later transformed into ammonium nitrate, amounting to 110,000 tons, as the final product of the plant. I have here a chart which shows the stages by which this transformation of nitrogen is carried out. This particular line [indicating on chart] represents the raw materials which come into the process, air, limestone, coke, and a certain amount of coal for drying and heating purposes, and power, which might come either from the Wilson Dam or from the steam power plant. The final product which the plant now makes is ammonium nitrate, which was to be used, mixed with T. N. T., in explosives, and that is represented by this pile of material here. The size of the pile represents the approximate daily tonnage.

Besides this final product, ammonium nitrate, which is now the product that the plant is designed to make, it can make a variety of other products. If the committee desires, I can tell you briefly about the different possibilities as to what the plant might make as well as ammonium nitrate.

The first material is ammonium sulphate, and that would be made from the ammonia by setting up sulphuric acid units which were shipped from the Old Hickory plant to make that material. Another product, in the making of which we would employ phosphoric acid, would be ammonium phosphate. Another product which could be made there by a method which we have worked out at the fixed nitrogen research laboratory is urea. Then we have ammonium nitrate, which might well be made in certain quantities even during peace time, because it is used in peace time in permissible explosives and might work to some extent into fertilizer products.

The CHAIRMAN. What is urea used for?

Dr. TOLMAN. That material is manufactured at the present time in Germany and has been manufactured to some extent in this country. It is used at the present time, in the largest quantities, as a stabilizer for celluloid, and because of the size of the moving picture industry considerable quantities of urea are used for that purpose. It is our belief that this material is being imported from Germany. We have tried to work out at our laboratory a process for this material which we believe is somewhat similar to the process used in Germany, although we believe we have some improvements over the process used by the Germans.

I have here a number of small bottles containing some samples of these chemicals which the members of the committee may examine at their leisure.

The main problem with ammonium nitrate as a fertilized compound is that although it is an excellent plant food, nevertheless it is a very deliquescent substance, in other words, it picks up water. We have made a number of experiments in regard to the various possibilities of ammonium nitrate as a useful component of fertilizer products. We have gotten up methods for graining and oil coating the ammonium nitrate, and you might sell it in that form. We have also experimented with a compound of ammonium sulphate and amomnium nitrate, which is a double salt. This doublt salt is less deliquescent than the ammonium nitrate, although not perhaps entirely satisfactory. Another method is to take potassium chloride and mix it with ammonium nitrate. The two salts react together to form a mixture which is nondeliquescent, and that material contains two substances which are useful in fertilizer, and which are used in fertilizer practice. Still another method is to mix ammonium nitrate and potassium sulphate together.

Mr. QUIN. I would like to know the meaning of that term, nondeliquescent.

Dr. TOLMAN. A deliquescent salt or material, is a material which, when exposed to the air will pick up water and become so moist that you can not use it in a fertilizer because it makes the fertilizer cake. I have here a sample of ammonium nitrate and if you expose that material it will take up moisture.

This pile on the chart represents a certain daily production of cyanamid fertilizer. That is made from the first product that is produced, namely, cyanamid, by hydrating and oil coating it. It is a material which is already used to some extent in fertilizer practice. The capacity of the American Cynamid Co. at Niagara Falls is believed to be 64,000 tons per annum, and it is believed that the largest quantity of cyanamid used in a single year in America was in the neighborhood of 40,000 tons.

The CHAIRMAN. When was that?

Dr. TOLMAN. That was before the war; the exact year I do not remember. The figures were stated by the company.

Since the total capacity of this plant in the form of cyanamid, which is the cheapest form of nitrogen, which it produces, would be 220,000 tons, it is not believed that any large proportion of the product of the plant could be sold as cyanamid . The material can not be used in mixed fertilizers in large amounts, for the following reasons: If used in large amounts it reacts with the acid phosphate to destroy its availability and it is also liable to produce dicyanodiamide, which is a poisonous substance to plant life. It can, however, be used in quantities of about 50 pounds to the ton of mixed fertilizer, but that would not absorb anywhere near the whole production.

We have made experiments which show that it can be more successfully mixed with basic phosphate, a material now produced by the Tennessee Coal & Iron Railroad Co. in Birmingham, and that it can be mixed with Thomas slag, a material which has been imported from Europe, and that it can be mixed with calcined phosphate, a new material which is not yet on the market.

This small building with the string of bottles is a plant where we think special chemicals should be manufactured. Nitrogen, when mixed in the form of cyanamid, is combined directly with the carbon atom, and that leads to the possibility of the production of a variety of chemicals which could not be produced by other methods of nitrogen fixation, and we believe the plant could produce quite a variety of organic chemicals.

The CHAIRMAN. That is what is being produced at the present time?

Dr. TOLMAN. The plant at the present time is shut down.

The CHAIRMAN. Or it could be produced at the plant if it were put into operation?

Dr. TOLMAN. The plant as it now stands is a real plant. One year after they started breaking ground their first product came through, but the plant as it stands will only manufacture as its final product, ammonium nitrate.

Additions to the plant would have to be made in varying amounts to manufacture this variety of products. Some of the additions would be relatively unimportant, such as putting in hydrating and oiling equipment for treating the cyanamid. To put in phosphoric-acid furnaces to make the ammonium phosphate would be more expensive. Those are some of the possibilities for the future.

I have a set of samples showing the different stages in the process, a set showing the various fertilizer materials which could be manufactured, and a set of samples of the special chemicals. I will not stop to explain these unless the committee desires me to do so.

The CHAIRMAN. You might explain that.

Dr. TOLMAN. This first case shows the stages of the process as now designed to be used at Muscle Shoals. You start with limestone, and coke, and nitrogen as your raw materials. You burn the limestone to form burnt lime and mix it with the coke and make calcium carbide. That is then ground up and put into a furnace through which nitrogen is passed, and you get your material which is called lime-nitrogen pig. Your other steps continue until you get the present product now made there, which is ammonium nitrate. If instead of treating your ammonia with nitric acid you treated it with sulphuric acid you will get ammonium sulphate.

Then I have here another case which shows a considerable variety of fertilizer materials which could be made with various additions to the plant. These are the varieties of the materials which could be made and I will leave these here with the committee. Here, for instance, is cyanamid mixed with calcined phosphate. That is a form of phosphate which could be successfully mixed with cyanamid, and here is the mixed salt that could be made from ammonium nitrate and potassium chloride. That would be a satisfactory material.

This case shows you some special chemicals which can be made with the help of nitrogen in the cyanamid form. There are only two substances which I would like to call special attention to.

One is nitroguanidine, which is a substance that the Ordnance Department is now experimenting with as a constituent of smokeless powder. Nitroguanidine can only be obtained from nitrogen in the cyanamid form. It is believed that there is a considerable possibility that nitroguanidine will be an important constituent of smokeless powder in the future. It was used by the Germans to some extent during the war. At the present time the only place on this continent where you can get the material to make nitroguanidine is the plant of the American Cyanamid Co. at Niagara Falls, Canada. If the smokeless powder used in the future should contain 50 per cent of nitroguanidine, which is perhaps an upper limit, the amount necessary to keep 100 divisions in the field per annum would be far larger than the total output possible at the Muscle Shoals plant. The reason why this material is a desirable substance for smokeless powder is because it has a high explosive force, and yet explodes with a very low temperature rise, is a pure chemical substance, and is nondeliquescent. In smokeless powder made out of nitrocellulose the character of the smokeless powder will depend to some extent on the character of the cotton. Nitrocellulose is not nondeliquescent and is not as dependable a substance as a pure chemical.

Another substance is veronal, a material used in sleeping tablets and that is also manufactured by using cyanamid.

Turning now to the value of the fertilizer compounds which could be made at Muscle Shoals, these are merely samples showing experiments which have been made. I have quite a number here. For instance, this photograph [indicating photograph] shows the yield of corn without any fertilizer being used, and this photograph [indicating photograph] shows the yield of corn when there were 80 pounds of phosphoric acid and 40 pounds of potash used to the acre. The yield has gone up. In this case [indicating photograph] nitrogen was used as well as phosphate and potash. Here [indicating photograph] 40 pounds of ammonia were supplied in the form of cyanamid.

The CHAIRMAN. Let me ask you a question right there. In the first basket, which is overflowing, was there no fertilizer used?

Dr. TOLMAN. No fertilizer was applied.

Mr. GARRETT. What was the percentage of increase there?

Dr. TOLMAN. This yield was 33.6 bushels of corn per acre without fertilizer, this one was 40.4 bushels, obtained by the use of phosphate and potash, and this one was 48.6 bushels, obtained by the use of phosphate, potash, and 40 pounds of ammonia to the acre in the form of cyanamid [indicating respective photographs]. These were experiments which we carried out at Muscle Shoals.

(At this point the witness exhibited a number of other photographs showing the increased yield of corn and cotton obtained by the use of nitrogen.)

Dr. TOLMAN. Mr. Chairman, I would like to try to make a tentative statement as to the possibilities of commercial success in the operation of the Muscle Shoals plant for the production of commercial fertilizer. You realize this is a difficult field because it is trying to make predicitions with regard to the future. This is the way that the fixed nitrogen research laboratory feels about the possibilities there.

With ammonium sulphate at its present market price, in the neighborhood of $50 a ton, if the Muscle Shoals plant is to be run commercially to produce ammonium sulphate as its main product, the plant can not be run and made to pay expenses.

If you regard the Muscle Shoals plant as mainly producing ammonium sulphate, then with the price of ammonium sulphate at $65 a ton, the fixed nitrogen research laboratory feels that the plant can just about pay expenses, and perhaps make a little profit, provided whoever runs the plant charges himself with a low enough figure for the water power which he uses, and does not make his capital charges too high. You might about break even, with ammonium sulphate selling at $65 a ton, if you charge yourself for power about three-quarters of a mill per kilowatt hour and do not take your capital charges on a sum larger than five or ten million dollars. I have to say these are our best guesses, because you can not make precise predictions in a field of this kind.

I would also like to make a statement as to the possibilities of the Muscle Shoals plant if you do not make ammonium sulphate your main product. If you go ahead and develop a plant for a variety of materials, including ammonium nitrate, ammonium phosphate, urea and special chemicals of various kinds, under these circumstances, I think the plant can be made a commercial success, provided the man who obtains the plant surrounds himself with the proper chemical and scientific talent.

The CHAIRMAN. You spoke about having an authorized statement from the Secretary of Agriculture.

Dr. TOLMAN. Yes, sir.

The CHAIRMAN. Are you ready to give that to us?

Dr. TOLMAN. Yes, sir; I have just reached that point. I have the authority of the Secretary of Agriculture to present the following statement:

"The Department of Agriculture believes that the farmers of the United States would be benefited by the operation of the Muscle Shoals plant to produce fixed nitrogen for use in fertilizers.

"The department understands that Congress has already decided against the operation of this plant by a Government-owned corporation, and that operation must be by a private individual or corporation.

"The department has collected a great deal of information as to the utilization of the plant and as to the possibilities for its future development, and stands ready to cooperate to the fullest extent possible with any agency which may secure the plant.

"Concerning the Ford proposal, if its terms are sufficiently definite and binding to make sure that the plant will be operated continuously for the manufacture of fertilizer, the department looks with favor upon its acceptance, believing that it will result in making available a considerably increased supply of fertilizer in time of peace and give us assurance of adequate supplies of explosives in case of need. The department does not undertake to pass upon the terms of the contract, or venture an opinion as to whether they are sufficiently definite and enforcible to guarantee the continuous manufacture of fertilizer."

Mr. CROWTHER. I would like to ask one question. Is there any opportunity for the production of nitrates at plant No. 1 which proved a failure?

Dr. TOLMAN. Yes, sir.

Mr. CROWTHER. That is a possibility?

Dr. TOLMAN. Do you mean the plant or the process?

Mr. CROWTHER. The process.

Dr. TOLMAN. The Haber process. I should like to say that I believe the Haber process is a very important one.

Mr. CROWTHER. There is quite a plant there, is there not, that cost about $13,000,000?

Dr. TOLMAN. Quite a plant, but it is not at all on the same scale that plant No. 2 is on, and is not yet successfully developed.

Mr. CROWTHER. Do you think that would be the plant that Mr. Ford refers to in connection with experimentation and further production?

Dr. TOLMAN. I believe it would be very important to carry out further experimentation on the method of fixing nitrogen by the Haber process. In fact, there are many people who believe the Haber process will replace the cyanamid process. There is already more capacity for nitrogen fixation in Germany by the Haber process than by the cyanamid process.

Mr. CROWTHER. I do not understand that this contract binds Mr. Ford to undertake that in plant No. 1; his specification is confined to plant No. 2 entirely.

Dr. TOLMAN. Yes, sir.

We have carried out a considerable number of investigations at our laboratory on the Haber process. The main step of that process is to obtain a catalyst which will cause the union of the nitrogen and hydrogen to form ammonia. This is a sample of our catalyst, which we know is superior to any catalyst in America, and we believe it is superior to any in the world. It produces 16 per cent ammonia at 100 atmospheres, while the Germans were getting in their plant about 5 per cent ammonia at the time of the armistice.

The CHAIRMAN. There was an explosion in the German plant about a year ago.

Dr. TOLMAN. There was an explosion at one of the two German plants that use the Haber process, the smaller of the two that use that process.

The CHAIRMAN. The loss of life in that explosion was something terrific.

Dr. TOLMAN. I believe so.

The CHAIRMAN. I think our newspapers went on to say there were about 6,000 people injured and killed in that explosion. Would you consider that a safe process?

Dr. TOLMAN. We do not know what it was that exploded at the plant. A committee has just been formed in this country at the call of the president of the National Academy to undertake an investigation of the explosibility of the substances involved at that plant, and we have not yet received sufficient information to tell what the causes of the explosion were. Until we get that information I think in any case it would not be wise to condemn the Haber process. I feel sure it can be operated with reasonable safety.

The CHAIRMAN. There is one other company that is using that process at the present time in Germany, but it is a comparatively small company, is it not?

Dr. TOLMAN. No; it is my understanding that both plants are owned by the same company and the one which did not explode at Merseburg is much the larger of the two. The Oppau plant was the smaller of the two. It was nearer the allied lines, and is within the territory taken at the time of the armistice.

The CHAIRMAN. I was of the impression that the plant which did not explode was the smaller of the two.

Dr. TOLMAN. I think it is the other way around.

Mr. PARKER. The Haber process is used by the Syracuse plant?

Dr. TOLMAN. At Syracuse, I believe, they are making about 12 tons of ammonia a day by the Haber process.

Mr. GREENE. Speaking of processes, Dr. Tolman, these questions which follow will be those of a layman. I do not understand the chemistry of this business, but I would like to get a little information in regard to the general principles. It is reasonable to assume that you chemists of agriculture have pretty well established what might be regarded as standard definite formulæ for the future regarding the necessities of the soil in the way of fertilizer.

Dr. TOLMAN. Prof. Whitney, of the Bureau of Soils, is here to testify and he is qualified to speak on subjects of that kind. I am a chemist and not an agronomist or a water power expert and I can not answer that question, or questions in regard to the agricultural use of fertilizers in general, or questions in regard to water power.

Mr. GREENE. You have made some reference to a term which is comparatively new to most of us; that is to say, urea. What is the percentage of nitrate in that?

Dr. TOLMAN. Forty-six and six-tenths per cent nitrogen.

Mr. GREENE. How does that compare with the ingredients now commercially employed?

Dr. TOLMAN. It is very much higher. It has a very much higher content of nitrogen than any in the substances now used in fertilizer practice.

Mr. GREENE. Approximately, what will be the difference in the percentage?

Dr. TOLMAN. In ammonium sulphate the percentage is 21.2. In the Chile nitrate the percentage of nitrogen is 15.7; that is, 95 per cent pure Chilean nitrate.

Mr. GREENE. Then it is the recommendation of you people who have made experiments with these things that any process or formula that makes for the development of this more highly concentrated form like urea is an advantage?

Dr. TOLMAN. I would say they have certain advantages, but I would not like to see anything done which would crowd out of the fertilizer market certain low-

grade materials which have a definite economic place in the market at the present time.

Mr. GREENE. That would have its peculiar trade advantages?

Dr. TOLMAN. It would have advantages in the case of shipping from place to place.

Mr. STOLL. How many tons of ammonium sulphate can be gotten from the 110,000 tons of the nitrate you would produce at Muscle Shoals?

Dr. TOLMAN. If we were going to make ammonium sulphate there we would not make ammonium nitrate. The total capacity of that plant for making ammonium sulphate would be in the neighborhood of 190,000 tons.

Mr. STOLL. That is in the shape of a fertilizer ingredient.

Dr. TOLMAN. Ammonium sulphate is a material which is now used in standard fertilizer practice.

Mr. STOLL. In what other forms do you use ammonia in the sulphate?

Dr. TOLMAN. Nitrate of ammonia——

Mr. STOLL (interposing). Ammonia for fertilizer?

Dr. TOLMAN. We consider fertilizer nitrogen as so much ammonia, even though the nitrogen is not contained in the exact form of ammonia. We speak of the organic ammoniates, such as dried blood, fish scrap, and garbage tankage, etc. We speak of it as containing so much ammonia.

Mr. STOLL. Is ammonia a scarce element, hard to get?

Dr. TOLMAN. There are at the present time two main sources of ammonia—from coke-oven by-product recovery and from city gas manufacture. The coke-oven by-product recovery is much the larger of the two.

Mr. STOLL. Those are the only sources we have now?

Dr. TOLMAN. Except the Muscle Shoals plant and other nitrogen-fixation plants.

Mr. STOLL. Through the air or from the coke ovens?

Dr. TOLMAN. Either through the air or from the coke ovens, and a small amount from gas manufacture for city gas.

Mr. STOLL. Do you know the amount that is being made from coke ovens and from gas?

Dr. TOLMAN. Prof. Whitney can tell you about that.

Mr. HULL. Doctor, I judge from your answer to a question asked you some time ago that you think we should have something specific in the contract we make with Mr. Ford in order to protect the people in regard to overcapitalization on increased overhead in this proposition, in order to make a success of the commercial production of fertilizer; is that true?

Dr. TOLMAN. I do not think that is quite what I said.

Mr. HULL. I know you did not say it, but you suggested it.

Dr. TOLMAN. I think what I said was that you could not manufacture sulphate there at a profit if you charged yourself too large a quantity for the water power and too much for the working capital which you put into the business. With regard to the form of the contract which the Congress should require I have no suggestions to make, because that is entirely outside of my field.

Mr. HULL. You spoke of the Government having decided not to develop it as a Government proposition. You would not recommend that, would you? You are acquainted with the difficulties we would confront if we undertook to do that?

Dr. TOLMAN. I think it would be very difficult to operate the plant by a Government department. That is somewhat different from operating it by a Government-owned corporation. But so far as my ideas on either of those subjects are concerned, I have not had enough experience to make any suggestions to you.

Mr. HILL. Doctor, I understood you to say this plant had a capacity of about 190,000 tons of ammonium sulphate.

Dr. TOLMAN. If you should turn the fixed nitrogen into ammonium sulphate.

Mr. HILL. Has ammonium sulphate any place in explosives at all?

Dr. TOLMAN. No.

Mr. HILL. I think I also understood you to say that to make ammonium sulphate you do not first create ammonium nitrate. Is that correct?

Dr. TOLMAN. That is correct.

Mr. HILL. The ammonium sulphate is an ingredient essential to certain types of fertilizer?

Dr. TOLMAN. It is used in mixed fertilizers.

Mr. HILL. If this plant were run at its maximum capacity for fertilizer, which would be 190,000 tons of ammonium sulphate, it would not have at the same time any capacity for the production of nitrate, would it?

Dr. TOLMAN. If the units for making ammonium nitrate were left there, it would have.

Mr. HILL. Then you could not get 190,000 tons of ammonium sulphate?

Dr. TOLMAN. Yes, sir; if you did not operate the ammonium nitrate units.

Mr. HILL. If you had the two separate units, it would be a question of where you turned the power in; is that right?

Dr. TOLMAN. If you are going to make ammonium sulphate or ammonium nitrate, down to this part of your process here [indicating], taking in this general range, your process is the same. Then when you get ammonia gas you can run it into sulphuric acid to make ammonium sulphate, or you can take a part of the gas and run it into nitric acid and make ammonium nitrate. If you are going to make ammonium sulphate and have to keep the capacity of the plant for making ammonium nitrate you could cease to operate a part of the plant.

Mr. HILL. Then it would be a comparatively simple matter to make ammonium nitrate if it were necessary?

Dr. TOLMAN. Yes, sir.

Mr. HILL. In the meantime the plant could be producing ammonium sulphate?

Dr. TOLMAN. Yes, sir.

Mr. MILLER. It is very desirable, is it not, Doctor, from an agricultural point of view, that the production of ammonium nitrate be encouraged in this country?

Dr. TOLMAN. Ammonium nitrate or ammonium sulphate.

Mr. MILLER. Those things that go into the fertilizer.

Dr. TOLMAN. You say is it desirable?

Mr. MILLER. I say it is desirable that there should be encouragement given to the manufacture of those substances.

Dr. TOLMAN. That is a question?

Mr. MILLER. Yes.

Dr. TOLMAN. That is my belief. Prof. Whitney will testify as to the need of nitrogen; but that is my belief; yes.

(Thereupon, at 4.25 p. m., the committee adjourned to meet to-morrow, Wednesday, February 15, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Wednesday, February 15, 1922.

The committee met at 10.20 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. Gentlemen, I expected this morning to begin with the other representative of Mr. Ford, but he has sent me word that he is ill this morning and will not be able to come down until to-morrow morning. Dr. Whitney, of the Department of Agriculture, will be here in a very short while. The governor of Tennessee is here to testify before the committee to-day, and I will ask Mr. Taylor to say a few words in presenting the governor.

STATEMENT OF HON. J. WILL TAYLOR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE.

Mr. TAYLOR. Mr. Chairman and gentlemen of the Military Affairs Committee, it certainly affords me a very distinct and peculiar pleasure to present to the committee this morning Hon. A. A. Taylor, governor of Tennessee. Perhaps some of the members of this committee who have been in congressional service a number of years remember Alf Taylor, as he served here as a Member of Congress for three terms from the first congressional district of Tennessee. As I said in the opening, it is a very great pleasure to me to present him to the committee this morning.

STATEMENT OF HON. A. A. TAYLOR, GOVERNOR OF THE STATE OF TENNESSEE.

The CHAIRMAN. Gentlemen, Gov. Taylor, of Tennessee, will give his views on this Muscle Shoals proposition to the committee. We will be very glad to hear from you, Governor, in your own way.

Mr. TAYLOR. Mr. Chairman and gentlemen of the committee, before proceeding I wish to thank the chairman and this committee on behalf of my State for the great courtesy that has been extended to us by your granting us the privilege of appearing before the committee at this hearing. I have a statement that I wish to read, and I hope you will pardon me for reading it, because I did not want to make any mistake, and I have therefore reduced the statement to writing.

I must tell the committee that I feel a sorrow to find upon arrival here that a power company in my sister State of Alabama, known as the Alabama Power Co., is perhaps delaying and disturbing this committee's approval of Mr. Ford's offer for Muscle Shoals. I am sorry that my brother governor of Alabama, Mr. Kilby, is not here, for I believe he would agree with me that the Alabama Power Co. ought to withdraw its contentions, however righteous they are, or the Alabama Power Co. ought to change its name. No corporation should bear the name of Tennessee and Alabama which oppose the immediate acceptance of the Ford offer by this committee, and while I always will and shall hope not to strain Tennessee's hospitality to any corporation desiring to build up the State of Tennessee, yet I must say that no corporation or individual is welcome in Tennessee which opposes the immediate adoption by Congress of the Ford offer. I am further informed that the street railway troubles in two cities of my State, Memphis and Knoxville, are being adjusted and refinanced by interests in New York which are identified with and may be in control of the Alabama Power Co., and while I welcome their afforts to establish the street railway transportation of Memphis and Knoxville on a sound financial basis, I must tell them that if they are opposed to the Ford offer I hope they will excuse me for saying that they are not welcome in Memphis or Knoxville—not welcome in Tennessee. No man, no interest, no corporation can oppose the Ford offer and be a friend to Tennessee and Alabama and their people and the people of the South.

We who are here from Tennessee to-day are deeply interested, and this is our reason for seeking to appear before this committee.

The Tennessee River is obstructed by the dam that has been built. We used to carry our products down the river into the Ohio River to market, but all navigation is done away with by reason of this obstruction.

It is doubtless true that the original intention of the project was to generate power to operate machinery to manufacture the munitions of war, but now that the war is over, it is easy to convert it into a plant for the manufacture of the implements of peace.

It is located in the heart of a great agricultural country; in the heart of a great mineral country and timber section; perhaps the only virgin hardwood forests left in the United States. The only reason these vast resources have not been developed fully has been the lack of machinery and cheap power to operate it.

The Muscle Shoals project is, as you all understand by this time, unfinished. The Government has expended a great deal of money, which will be lost, lost forever, if the project remains unfinished. In the nick of time there steps forward a man who proposes to lease it and operate it if the Government will finish it.

It is my privilege to be acquainted with that gentleman, and my conduct with him has given me confidence in him as a very superior man. If I needed an indorsement of him to increase my confidence in him, the indorsement of one man would be sufficient for me. Mr. Edison said in my presence that the immensity of the power to be generated by that plant when completed was impossible to conceive of, and the results, industrially, to the United States, of the completion and operation of that plant, were inconceivable also. At the same time he said that Mr. Ford is the man to take hold of it and operate it. He is the man because of his ability, because of his business sound judgment, and because he has the money.

Now, this is the indorsement of Thomas A. Edison, whom I regard as the greatest man alive to-day. If invention is the chief civilizer of mankind, Thomas A. Edison has done more to advance civilization than any living man, for he is unquestionably the greatest inventive genius of the age.

The completion, gentlemen of the committee, of this dam means a great deal to the United States and to us; in fact, it means almost everything. We are down in the dumps. We are depressed. We want this Congress to start something to give us hope. I doubt if you have—I know that this committee has not had before it a question of so great and of such far-reaching importance as the question now before you since this committee had under consideration the proposition to provide an American army to participate in the World War.

Why, the completion and operation of the Muscle Shoals project, gentlemen, means new enterprises. It means new fields for the employment of labor. It means the creation of new wealth. It means the enlargement of the basis of taxation. It means new life, new hope.

One of my brothers remarked that it was in the South and "what do we care for the South; we are taking care of our own section."

Now, gentlemen, we are here not to try to champion the cause of any particular State or any particular section. We are Americans and we believe that whatever is good for one section is good for all. When the Government of the United States was expending $116,000,000 in the interests of irrigation in the different sections of the West, we of the South rejoiced. We said amen! We did not object to the building of the Roosevelt Dam, which cost so many millions. We did not object to the Government of the United States donating about 120,000,000 acres of the public domain to induce the building of railroads into those undeveloped sections, to secure to them transportation. We said amen! What is good for the great West is good for the South. What is good for New England is good for the whole country.

We ought not to allow these local prejudices to have any weight, and, of course, they will not before this patriotic, intelligent committee.

We were divided once. Thank God, we are all together now. There have been two periods in this country since we were divided and hostile when we were absolutely a unit. We were united in sentiment and in purpose, North, South, East, and West, in the Spanish-American War, when the first blood spilled in that war was the blood of a son of the South. We were absolutely a unit in the recent World War when the sons of the West, and of the South, and of the North, and of the East marched shoulder to shoulder to the front, and turned the tide of battle; and I do not mean any reflection upon any other military aggregation in that great army, because any division of the American Army could have done the same thing, but it so happened that the Thirtieth Division, composed of South Carolinians, Georgians, and Tennesseeans, were first to cross the Hindenberg line.

Now, gentlemen, pass this measure, start the wheels of industry to work, create this new wealth, broaden this basis of taxation, National, State, and county; do this thing, accept this Ford proposition, and I guarantee to you that every vestige of any lingering sectional prejudice that may exist will be obliterated forever.

I have detained you long enough. There are other gentlemen here with me who are better able to impart information than I am. I want to again thank you for this great privilege you have granted this delegation from Tennessee.

The CHAIRMAN. Governor, would you object to answering any questions that members of the committee desire to ask?

Mr. TAYLOR. If I can not answer them, I have gentlemen with me who can.

Mr. HULL. Governor, not to embarrass you at all, I would like to ask one question for my own information. I have not been to Muscle Shoals, but I have read some articles about Muscle Shoals and have tried to inform myself. My information is that the shoals at the present time and in the present state of the development prevented any navigation, commercially, up the Tennessee River above the shoals. I judge from your remarks that there was navigation through the shoals.

Mr. TAYLOR. Yes, sir.

Mr. HULL. To what extent was there commercial navigation? I understand that there is not over 2 feet of water and that it is a very rapid fall of some 100 feet.

Mr. TAYLOR. That is true, and if we had very large boats we have to wait a little for a tide, but we got along pretty well. I remember that my father 60 years ago sent flatboats down the river loaded with iron to the Ohio River by way of the Muscle Shoals.

Mr. HULL. Yes. We used to navigate on the Mississippi when we had low water, but we have found recently that unless you keep over 2 feet of water in the river the year around that there is no commercial navigation; is not that true on the Tennessee?

Mr. TAYLOR. We could always float flatboats loaded with grain and loaded with iron down the river over the shoals.

Mr. HULL. I understand that, but was there any real navigation? I am trying to be informed on this matter. Were there any commercial companies transporting grain down the Tennessee River and transporting other things up the river through these shoals?

Mr. TAYLOR. There was a canal, sir, 5 feet deep. It was not large enough for a very large boat, of course.

The CHAIRMAN. Is not your condition down there somewhat like the condition over in Canada, where they have boats especially to go through the rapids?

Mr. TAYLOR. Yes, sir.

The CHAIRMAN. And so you could always get through with a man who understood where the rapids were and so on?

Mr. TAYLOR. Yes, sir.

Mr. GARRETT. Governor, unfortunately, I did not get here until after you had started your statement. As I understand it, you indorse this proposition made by Mr. Ford, in its entirety, regardless of any other criticism.

Mr. TAYLOR. I certainly do; yes, sir, and I speak the sentiments of every man, woman, and child in my State.

The CHAIRMAN. Gentlemen, this morning I expected to be able to call Mr. Worthington, of the Ford forces, but Mr. Worthington this morning sent me word that he was ill and in bed and was not able to be out. Therefore, Dr. Whitney, of the Department of Agriculture, has kindly consented to tell his story regarding the Muscle Shoals matter.

Dr. Whitney, the committee will be very glad to hear you, and you may proceed in your own way, stating for the benefit of the record your name and the position you occupy.

STATEMENT OF DR. MILTON WHITNEY, CHIEF OF THE BUREAU OF SOILS, UNITED STATES DEPARTMENT OF AGRICULTURE.

Dr. WHITNEY. Mr. Chairman, as Chief of the Bureau of Soils, which has the consideration of the fertilizer material problem, we have for a long while studied the materials available for use on the soil in increasing crop production.

Some 20 years ago Sir William Crooks in addressing the British association made the announcement that if we did not work out methods of supplying ourselves with fixed nitrogen the limit of the production of wheat would soon be reached. This put the world on record, gave them notice that there was one very material step to be taken to find some way to get an independent supply of nitrogen, additional to anything that we now have, in order to keep pace in our crop production with the needs of the world.

When the European war first started, before we got into it, we recognized the importance in this country of finding a method of fixing nitrogen for the use of our farmers. We knew that a great amount of the nitrogen that was available would be diverted to war purposes. We therefore constructed in the Bureau of Soils at the Arlington farm one of the first, if not the first, unit of the Haber process of fixing nitrogen. We investigated other proposed methods, but decided that this was the best. When this country went into war we had the unit in operation as a testing plant, as a small unit, and the War Department took that over, enlarged it somewhat, and after the signing of the armistice moved it from the Arlington farm to the American University, where we have continued to cooperate in the perfection of this exceedingly difficult method.

Regardless of what any interests say, it is the deliberate feeling of the scientific men of the world that the time has come when it is essential for agriculture that we have an independent source of supply of fixed nitrogen.

The fertilizer industry, as you all know, is a comparatively new industry. We discovered our first phosphate-rock deposits in 1865, and others shortly afterwards; and the potash deposits of Germany in about the same time. Nitrates and nitrogen were not used for agriculture until the early part of the last century.

The first shipload of nitrate of soda sent over to London at the instigation of Humboldt, or as a result of his travels, lay in the vessel until it was dumped overboard. No one would venture to try this new fertilizer for crops.

In 1830 a second shipment was sent over, which was sold, distributed, and used. Gentlemen, after all the years of civilization, the use of nitrate of soda—that is, the use of something that comes from outside the farm, from outside the country—was started in 1830.

The fertilizer industry was started a little bit earlier by the digesting of bones in sulphuric acid. They were mainly the bones of the farm that were

cracked up and treated with sulphuric acid. This was started, I think, by some person in Scotland about 1780. Now, you have the beginning of the fertilizer industry.

You can see that it is not a very old industry. The fertilizer industry has grown up as a scavenger industry. They have collected old bones; they have searched the plains for buffalo bones; they have gathered up all of the bones from domestic slaughterhouses. Those were the first things that were commonly used. The industry has now attained very large proportions, but it has never been put on a real chemical basis.

This material that is gathered up from the cities and as waste materials from the factories and either used as it is or processed has been the chief source of our supplies.

The time has come, however, gentlemen, when we must look to large and more independent sources. We can not depend upon the waste products. Let me tell you what we are depending upon now, and which is only sufficient to fertilize the crops of the Eastern States. Our great commercial crops of corn and wheat are not fertilized at the present time. They have got to be, if we keep pace with the needs of the world.

In ammonia we have nitrate of soda, which comes from Chile and for which we depend upon a foreign source. That is the only source of nitric acid also, and that supply, which is scraped up off of the arid plains and crystallized out, is the only source of nitric acid for the entire world. All the world is bidding for that.

Then we have sulphate of ammonia which is produced in our coke ovens, but the supply of sulphate of ammonia is limited by the amount of iron civilization needs. No one would think of coking coal for the value of the ammonia. It is a mere by-product, and the amount that we get is strictly limited by the amount of coal that is coked for use in the iron industry. Then we have cottonseed meal which is a very low carrier of ammonia. It has about 7 per cent of nitrogen, or a little over 8 per cent of ammonia. The amount of that is limited by the amount of cotton we need for our clothing. We would never think of growing cotton for the cottonseed meal.

Furthermore, while the amunt of nitrogen is low as compared with other materials that we use for fertilizers, the protein content of the cottonseed meal is quite high. It is 35 to 40 per cent of protein which we need for stock-feeding purposes. So that as a feeding material cottonseed meal is one of the high-grade materials that we are using more and more for feeding purposes.

Now, we in the Department of Agriculture recognize that cottonseed meal is an admirable fertilizer, but if it can be used for feed and the material is fed directly to the animals, you do not have the uncertainties of the climate that we have when we apply cottonseed meal to the soil in the hope and expectation that we will raise a larger crop. We have the feeding value in itself, and it is better to use it as feed than as fertilizer. The same thing is true of animal tankage or dried blood which we get from our slaughterhouses. The amount of nitrogen that we draw from that source is limited by the amount of cattle we slaughter. We will never raise cattle and slaughter them for fertilizer uses.

Now, it happens that the animal tankage and the dried blood, while they have a larger nitrogen content than cottonseed meal, are also valuable as feedstuffs, and the tendency now is, and the desire of the department is, to favor the use of tankage and of dried blood for feeding purposes rather than for fertilizers.

During the war the question was debated in the department whether we should issue an order that no cottonseed meal and that none of the organic materials that we use for fertilizers now that are fit for feeding cattle—that they all should be debarred from use for fertilizers, and the question was put up to me. I said it would be a very desirable thing, "but you have got to give the farmers a source of nitrogen supply to take the place of what you propose to withdraw from them."

This gives you an idea, gentlemen, of the limitations on the nitrogen supply for the farmers now, and upon the need that we can make of those things if we apply them to other things, provided we can get a fixed supply of nitrogen from some other source.

I think you will find—I know you will find that it is the sentiment of the scientific men of the world and of all those who have looked into these matters

that the world now needs an independent supply of fixed nitrogen for fertilizers to maintain the yield of crops.

Now, at the same time that we were considering the nitrogen supply, we looked into the phosphoric-acid supply at the Bureau of Soils. We found that the methods of mining and of treating the phosphate rock were exceedingly crude and very wasteful. I think you will find in some instances that something like 68 or 70 per cent of the rock that was mined of this valuable deposit upon which the world is dependent for all time, that 68 or 70 per cent of the rock was thrown on the dumps because it was not suitable for the manufacture of acid phosphate by the sulphuric-acid method.

Furthermore, when you have a phosphate rock that carries 68 per cent of tricalcium phosphate and 32 per cent of phosphoric acid, the commercial method is to mix it in about equal weights with sulphuric acid of a certain concentration. One part of rock, one part of acid brought together, a chemical reaction sets in, and you have the ordinary 16 per cent acid phosphate made out of a 32 per cent rock. So that you have diluted it, you have added something to it. You have increased its weight twice in order to distribute the material that you want. This is uneconomical.

Now, the method we used for treating this rock, which I think I may say is the beginning of this talk about concentrated fertilizer, was to take the phosphate rock and add to it some common sand, and add to that some powdered coke. There is another advantage in this. If we take the high-grade rock which is selected for treatment with sulphuric acid, we have to add sand. If we take the run of mine rock, part of which is rejected because of its impurities, we do not have to add the sand, except possibly just to finish off the proper proportions. So that we can often take rock that has been rejected by the miners and mix it with coke and heat it in an electric furnace, using the Cottrell precipitator, which we were the first ones to try, and we can get a phosphoric acid that looks very much like the sulphuric acid, but which has different properties. This is brought down in a form more or less concentrated. This [indicating] is 76 per cent of phosphoric acid, and the rest is water. If we get the phosphoric acid out at a proper concentration and cool it, we get the crystallized phosphoric acid which is 100 per cent pure. All of the impurities have been left behind in the slag, and we have this beautiful crystallized phosphoric acid. I think the committee would like to see this. I doubt if they have ever seen it because I had never seen it until we had prepared it.

An interesting thing in this connection is the fact that this phosphate rock is treated commercially with sulphuric acid, and the rock has to be pure, otherwise it will use up so much sulphuric acid that its manufacture will be unprofitable.

In the treatment of the phosphate rock with sand, we have another acid here, ordinary sand silica, and that, when liquid—and it liquefies at a temperature of about 1,500 or 1,600 degrees, has the same acid properties that the sulphuric acid has at ordinary temperatures. So that by using this in a liquid form, it acts on the phosphate rock. It combines with the lime and sets free the phosphorus or phosphoric acid, and we get a complete recovery of the phosphorus, and a complete separation of all the impurities which we do not get with the sulphuric acid.

Now, Mr. Chairman, we have then a phosphoric acid which in its present form is not adapted to plants at all; plants would be entirely unable to live in this solution as it is now.

From the Haber process or from the cyanamid process we get ammonia gas which is perfectly colorless. You would not think there was anything there until you removed the stopper, and then you have a very, very pungent odor, similar to the ammonia of commerce. This also, in its present form, is not adapted for use, but if this ammonia gas is led into this liquid phosphoric acid, then you get a salt, an ammonium phosphate which has 12 per cent of nitrogen, and 61 per cent of phosphoric acid. Eliminating all impurities, you just have a salt, all of which will pay its freight.

The ordinary method of taking care of this ammonia gas is to lead it into sulphuric acid, and if you pass this gas into sulphuric acid, you get ammonium sulphate; you get crystals of ammonium sulphate. This is what you use on your crops. This is something with which you are all familiar [indicating].

Now, let me call your attention to the wasteful method of the manufacturer. To make this sulphuric acid he has to bring pyrites from Spain or sulphur from Louisiana, burn it, and in the burning has to use a considerable amount of nitrate of soda and other things to get sulphuric acid. He has this very

corrosive mixture, sulphuric acid, which will destroy this table or anything with which it comes in contact; but he does get ammonium sulphate, but the sulphuric acid is simply a fixer, is simply a carrier, is simply something that puts it in condition under which plants will take it up. They will not take it up in this form.

Now, instead of using sulphuric acid, which is merely a carrier, which has no value in itself, which pays no freight, and which adds an impurity, gypsum, to the prosphate rock, if that ammonia gas is led into phosphoric acid, which also can not be used by itself, then you get this concentrated ammonium phosphate which can be used and which is more valuable, pound for pound, than ammonium sulphate, because it has the nitrogen and it has the phosphoric acid, while the ammonium sulphate has only the ammonia and the sulphuric acid, which has no value at all.

Now, Mr. Chairman, in considering the fertilizer industry and in considering the possible changes in the methods of the fertilizer manufacturers, many of which are exceedingly wasteful, for example, in order to make up their particular brands of 2–8–2, or 4–8–4, they have to get materials that they can mix together; that is, with no chemical change and no loss from mixing. They also have to get low-grade materials because they can not make out of high-grade fertilizer materials low-grade mixtures without adding fillers. The fertilizer manufacturers are very sensitive about this question of adding filler, but what they do is to import kainite from Germany. Kainite has 12 per cent of potash.

The CHAIRMAN. What is that?

Dr. WHITNEY. Kainite. They import kainite which has 12 per cent of potash and 88 per cent of worthless material. They pay the freight on it and they use it in their low-grade mixtures. They could just as well import muriate of potash which carries 50 per cent of potash and 50 per cent of impurities, but if they use muriate of potash in their low-grade fertilizers, they have got to add that 88 per cent of filler that was left over on the German soil. If they bring that high-grade potash and do not bring the low-grade, then they would be compelled to use a filler; that is, sand or peat or anything that would dilute it up, so that they could conform to their formula of 2–8–2 and have so much in a ton of 2,000 pounds.

The CHAIRMAN. What does that formula mean, two parts of what?

Dr. WHITNEY. Two parts of ammonia, 8 per cent of phosphoric acid, and 2 per cent of potash.

The CHAIRMAN. Does that simplify the matter so that the scientific men who are working on this thing can understand it better?

Dr. WHITNEY. Yes, it is intelligible to them, and it is, I think, to the farmers, because they have come to speak in those same terms.

The CHAIRMAN. Would it not be better if you could speak of the products themselves without referring to the component parts.

Dr. WHITNEY. Possibly so. I may have to do both, and I will be sure to do both if I use the one.

Mr. GREENE. Doctor, very likely some of us who do not understand about fertilizers and are profiting greatly by your instruction, would like to know why this vehicle containing the fertilizer compound is necessary; in other words, why add this great bulk of useless matter to it? Why is it not distributed upon the ground in its pure form?

Dr. WHITNEY. That is the point I am coming to.

Mr. GREENE. All right.

Dr. WHITNEY. The possibilities of that have not been realized until the researches of the Bureau of Soils have shown the possibilities.

I am going to propose to you now a formula here, a complete fertilizer, that can be made from fixed nitrogen and from phosphoric acid, and from potash in one and the same plant.

It is possible to get the ammonia from the Haber process or from the cyanamid process. That is admitted. Then it is also admitted that that ammonia can be oxidized to nitric acid so that we can make both ammonia and nitric acid in the same process in the same factory. If ammonia and nitric acid are combined, you get ammonium nitrate. Now, this can be made in the same process. It can be made at Muscle Shoals.

Ammonium nitrate has a nitrogen content of 35 per cent, exceedingly concentrated; 35 per cent against 7 per cent for cottonseed meal. It also has nitrogen present, in both the ammonia form and in the nitric acid form, which is considered of importance by the farmers. Now, if we have ammonium

nitrate and if we have ammonium phosphate, which I have already shown you that you get by leading ammonia gas into phosphoric acid prepared by the furnace method, then you can get potassium phosphate into this mixture. The potassium phosphate can be made in several ways. One of the proposed ways—and I am not sure that it will be successful because we have not finished our investigations—is instead of using sand in our mixture of phosphate rock and coke, to use the potash shales that carry about 8 per cent of potash; just dump that in with the phosphate rock and the coke in proper proportions, and the theory is that we will obtain potassium phosphate in that way, in one and the same operation.

Mr. QUIN. Could you answer this question? Is there a relationship between potash and this potassium phosphate?

Dr. WHITNEY. Yes; the potash goes into combination with the phosphoric acid and gives a potassium phosphate. Here is the salt [indicating]. It is proposed to manufacture that, but the details of manufacture have not yet been worked out as well as these others.

Now, if we take a mixture, therefore, of ammonium nitrate, of ammonium phosphate, and of potassium phosphate, which can be mixed in any proportion, and I have mixed them here in this bottle, so that in this sample of fertilizer there is 12.29 per cent of nitrogen, 49.17 per cent of phosphoric acid and 12.29 per cent of potash.

You now have a mixture which has the fertilizer materials in the proportion of 2–8–2; that is, 2 per cent of nitrogen, 8 per cent of phosphoric acid, and 2 per cent of potash; but if you wanted to dilute this in accordance with the custom in the fertilizer factories, you would have to add 83.73 per cent of a filler, and you would have to pay the freight and the tonnage on 84 per cent of material that is of no value to anyone except possibly to enable them to spread it more uniformly on the ground. There are not any impurities in this material, there is no filler necessary, and every part of this mixture carries its own freight, and none of it occupies useless space in the freight car.

The CHAIRMAN. Let me understand you. Can you simply use the product and spread it over the soil without any filler or anything added to it? If so, will it then act just as well as a fertilizer?

Dr. WHITNEY. Oh, yes. This has all the necessary properties. The filler you may put in if you want to. Now, that brings up a question which the fertilizer men have asked——

The CHAIRMAN (interposing). Could you tell us why they put the filler in?

Dr. WHITNEY. They put it in because it has become a custom, because they have sold these brands which, as I have told you, have generally been made of scavenger material. They have put this up in this form and have gotten the farmers used to it. The farmer is now beginning to get away from that practice. He is himself buying nitrate of soda. He knows how, and he is capable of using the concentrated form of nitrate of soda, which has 19 per cent of ammonia. He can be trusted to apply that. He is also using acid phosphate—16 per cent acid phosphate. This formula I suggest has doubled that amount of phosphoric acid. I think if he can use it in the one strength he can use it in the other.

The CHAIRMAN. Suppose he were to use it in excess of the strength that you give?

Dr. WHITNEY. We have these different mixtures.

The CHAIRMAN. What I mean is this: You say he can use it without the filler?

Dr. WHITNEY. Yes, sir.

The CHAIRMAN. Suppose in spreading that over the soil he gets too much of the concentrated stuff in any particular portion of his farm; what would happen?

Dr. WHITNEY. He will very likely injure his crops, just as he injures his crop now if he puts on too much acid phosphate or lets the seed get too close to the acid phosphate, or if he puts on too much of the nitrate of soda.

The CHAIRMAN. Then it would be necessary for him to study this proposition very carefully so that it would work out properly on his farm?

Dr. WHITNEY. O, yes; he has had to do that.

Mr. FIELDS. The farmer can do the same thing by using it with filler, by applying too much of it, can he not? I have seen farmers burn up their crops in that way.

Dr. WHITNEY. Yes.

Mr. GARRETT. As I understood the inquiry of the chairman it was this: According to your formula, out of a ton of so-called fertilizer as now distributed by the manufacturers, you would have 320 pounds of that mixture in a ton, and 1,680 pounds of filler?

Dr. WHITNEY. Yes.

Mr. GARRETT. The process of distribution by the farmers now is by machinery that has been adapted to that work, so that he can so drill and arrange his machinery as to distribute any number of pounds he wishes over an acre of ground. Now, then, I understood from the chairman's inquiry it was whether by the use of machinery it would be possible for the farmer now to readjust himself and distribute 320 pounds of concentrated fertilizer where he had heretofore to distribute 2,000 pounds?

Dr. WHITNEY. That is a very fair question. It has to be met in one of two ways. Our fertilizer distributors are not very satisfactory as we have them now. The makers of farm machinery have got to devise better machines for applying fertilizers. You all know that those we have are none too satisfactory. If it is desired to mix a filler with this so as to get it more dilute, this can be mixed with sand or with peat, or any material you want. It can be mixed on the farm, it can be mixed at the distributing point, by the dealer, or it can be mixed by the farmer.

The CHAIRMAN. That explains my point of inquiry. If you will kindly proceed, we will be obliged to you. I am very sorry to have interrupted you.

Dr. WHITNEY. There have to be adjustments. This is not going to take place all at once. This is looking to the future; this is looking to the time when, instead of 8,000,000 tons of fertilizer we may have to produce 16,000,000 tons, or even more than that. It is a question of providing the material and putting it in concentrated form, and the question of how it is to be applied has to be worked out by the farm machinery men or by the manufacturers, or the farmers themselves.

Mr. FIELDS. The farmer, in applying this concentrated fertilizer to the soil, will have to follow the instructions, just as he follows the instructions now in applying the fertilizer which he gets from the dealer.

Dr. WHITNEY. Yes; he has to take care.

Mr. FIELDS. He has to be careful to follow instructions under the present system?

Dr. WHITNEY. Yes. Of course, in getting a ton of fertilizer now you pay all the freight on 2,000 pounds. You get an equivalent amount of fertilizer material and pay the freight on 320 pounds by this other method.

Mr. GARRETT. That is what I wished to develop there in connection with the process of mixing after it gets to the farmer. He would have to pay freight on 1,680 pounds of filler in each ton of fertilizer.

Dr. WHITNEY. That is what I mean now in reference to concentrated fertilizers. Of course, there are intermediate grades. For instance, when you take this rock phosphate and treat it with phosphoric acid you can get a double or a triple superphosphate that carries 45 to 50 per cent of phosphoric acid. That is a great advance over what we have been doing over the method we have been pursuing. But, strange to say, that concentrated phosphate is in very little demand. If we leave more of the filler in Florida or in Tennessee and deliver to Baltimore a concentrated acid phosphate that contains 45 or 50 per cent of phosphoric acid, the manufacturer in using it in his mixtures is obliged to restore to it, in order to get his formula, the impurities that equal those that have been left in Florida or Tennessee.

I have spoken of the formula 2–8–2. I have here also mixtures of other kinds. Here is one of 10 per cent nitrogen, 8 per cent of phosphoric acid, and 4 per cent of potash. That is equally satisfactory as a mixture.

The CHAIRMAN. Is that referred to as 10–8–4?

Dr. WHITNEY. That would be 10–8–4, and it is a highly nitrogenous fertilizer. Here is one which is called 4–8–10, which contains 4 per cent of ammonia, 8 per cent of phosphoric acid, and 10 per cent of potash, which would be something like what they use in the potato fields of Maine. And they can be mixed in all proportions.

Mr. FIELDS. The character of the mixture, or the proportion of the mixture, is determined by the character of the soil to which it is to be applied?

Dr. WHITNEY. Yes.

Mr. FIELDS. And the crop to be grown?

Dr. WHITNEY. Yes. Mr. Chairman, there is a situation in the fertilizer industry now that is difficult to explain and difficult to understand.

When the war came on we knew that potash would be denied us by an embargo on the German potash salts. Congress authorized investigations to find possible sources of potash in this country. We found that we have an

ample supply of potash in this country for our needs. It is a question of manufacturing costs.

The Bureau of Soils feels that we will eventually be able to supply our needs, but that is a prediction that I want you to take with caution, because it is tied up with manufacturing enterprises, and the potash is generally a by-product. So that while we know we can get the potash under stress, the question of how much we can produce in competition with the foreign supply is one that we can not answer.

At the present time, or in 1920, the fertilizer manufacturers estimated a tonnage for 1921 of around 8,000,000 tons. As you will remember, the break in the business markets of the world, in the farmers' prices which they were able to get for their products, and the manufacturers' prices for their products began to appear in Washington about February, 1920. The indications were not sure, but we rather looked for a break to come.

In March, the manufacturers contracted for their ammonium sulphate at prices then prevailing. They contracted for their ammonium sulphate in March of 1920 for the season of 1921. Now, by May and June, the break was very pronounced. The farmers had experienced their losses of revenue, and by the time the fertilizer men decided, or were deciding on their prices, from November to December, 1920, the market in fertilizer materials had broken and had gone to pieces, and by the time the farmers began to buy in the spring of 1921, the market was completely demoralized. The actual sales of fertilizer materials which it was anticipated would be about 8,000,000 tons in 1921, was approximately 4,500,000 tons, due to lack of buying power. That left the manufacturers with a large amount of material, of high-priced material, to carry over in 1922. Now, the difficulty of bringing down prices where material has been carried over for two years is very great. But it happens if their anticipations are correct, that the market for 1922 will not be much larger than the market for 1921, then they have a large part of their material that they will need in 1923, which was actually bought under contract prices of the spring of 1920.

Now, there is no price for fertilizers. There is no price for fertilizer materials. It is a buyer's market; you can get the material for what you are willing to give. At the present time there is a large excess of nitrate of soda in this country; there is a large excess of ammonium sulphate, although the dealers will tell you there is a great activity. But there is an excess of ammonium sulphate, although it is less than it would have been if there had not been a shut down of the iron and coke ovens. There is a large excess of potash salts in this country, imported. They imported last year about the same amount as they imported in 1913, but the purchasing power was gone and the price now is down below the 1913 price. To make any statement, to make any prediction of the amount of material that will be needed right now is very difficult. We have these surplus conditions in all lines of business; it is admittedly abnormal. What we must look at here is not what the conditions are to-day, but what they will be when we return to a normal situation. They anticipated 8,000,000 tons of fertilizers to be called for last year. If it had not been for the intervention of the war and the fact that during the war period we saw no increase in fertilizer production, instead of having 8,000,000 tons we should have expected a market of about 10,000,000 tons, because there is a pretty steady increase of about 7½ per cent per annum in the consumption of fertilizers. That is as close an estimate as can be made, so that we should be looking for 10,000,000 tons of fertilizers before very long, and we would have had them if it had not been for the war. When the demand is increasing at that rate it is becoming more and more difficult to get adequate supplies of ammonia, and that is the limiting condition. We have plenty of phosphoric acid, and we are searching very diligently for potash. We can get it anyway from European sources. But the nitrogen is the limiting condition.

If we have the fixed nitrogen products we have got to change our fertilizer system in order to use those fixed nitrogen products to the best advantage, and now is the time, in the United States, to change the whole system and adopt a new standard.

The CHAIRMAN. Doctor, the members of the committee will probably like to ask some questions in reference to the statement you have made. Is it your opinion that the Muscle Shoals nitrate plant No. 2 would, therefore, be of essential value in the fertilizer business in the United States, if it is carried on constantly?

Dr. WHITNEY. Mr. Chairman, I would rather not answer that question for the reason that I have had nothing to do with the Muscle Shoals project, except in an advisory capacity in regard to what might be made there. I know nothing of the plans of operating it. I can only say that the fixed nitrogen products that we obtain from either the Haber process or the cyanamid process we consider essential to the future welfare of this country. Those things are made there, but whether the Muscle Shoals plant should be continued under Government ownership or private ownership I would not like to pass an opinion on.

The CHAIRMAN. The testimony before the committee is to this effect, as I recall it. Mr. Ford is willing to buy nitrate plant No. 2 and also nitrate plant No. 1, the Waco quarry, the transmission line, which is about 88 miles long, and one or two other things; but his representative stated yesterday before the committee that he proposed to use nitrate plant No. 1, not for the manufacture of fertilizers but for the manufacture of automobiles. Nitrate plant No. 2, which uses the cyanamid process, Mr. Ford is willing to use for the manufacture of that material which is necessary in fertilizers. So that Mr. Ford's offer is not really for continuing both plants for the manufacture of nitrates. He wants to use only the one plant for that purpose. That is the testimony before the committee at the present time, as I recall.

Dr. WHITNEY. Mr. Chairman, knowing nothing about the plans of Mr. Ford, and knowing nothing about the Muscle Shoals outfit, I can only say that from the agricultural point of view there is all the appearance of fitness for the manufacture of concentrated fertilizers, and any plans that will make possible the manufacture of nitrogen fixed products and the concentrated fertilizer you can get by that would be a great thing for the American people. If we do not get it at Muscle Shoals, we will have to get it somewhere else. As the building is erected and as the factory is completed, it would seem to me if arrangements can be made they should be made to encourage the production at that point.

Mr. GREENE. Doctor, I suppose the basis of all farm fertilization now, in the light of modern science, must be soil analysis?

Dr. WHITNEY. No; it is the results obtained from the trying of fertilizer on the soil. Soil analysis has failed us completely as a method of determining what fertilizer is required.

Mr. GREENE. So then it is determined simply by localized and specialized experimentation?

Dr. WHITNEY. Yes, sir.

Mr. GREENE. One man's farm, after some experience, demonstrates the result that it needs certain kinds of fertilizer.

Dr. WHITNEY. It is one man's farm extended over a similar type of soil. We would go as far as that, and in the soil surveys we are making we anticiplate that there will be certain fertilizer treatments for certain types of soils. But provided always that the farm has been handled in a thorough-going, up-to-date manner. Gentlemen, regardless of your farm, regardless of your soil, you must remember that the market needs a product of the joint effort of a man and of a soil. The man is the intelligent and directing head of that partnership, and he is responsible for the maintenance of conditions in the soil, just the same as you say he is responsible for maintaining your animal in a good condition.

Mr. GREENE. What I wanted to get at was whether you have some more or less fundamental basis upon which every man fertilizes his farm; that is to say that there are certain recognized principles which vary with localities and character of soil, and start right in on the use of fertilizers, with his knowledge of the local conditions.

Dr. WHITNEY. It is based upon empirical information at the present time, and it has been based upon empirical information, no matter what the claims of the scientists may be. It has been based upon trials made here and there.

Mr. GREENE. We will assume that after such experimentation the farmer arrives at what may be regarded as a safe standard for the fertilization of his soil. Does he experience any change in that standard through the accumulated use of fertilizers that have this large content which is merely a vehicle for the introduction of new soil and new elements?

Dr. WHITNEY. Mr. Chairman, the experiences of the scientists of the world in respect to the fertilizer trials on land has been very peculiar, and it is very interesting. It forms a very interesting chapter in the narrowness of view with which we start out. Seventy years ago Sir John Laws, who was then interested in making superphosphates of lime by sulphuric acid treatment of

bones, in association with Liebig, and in controversy with Liebig as to the value of things, started a series of experiments with a large number of fertilizer materials. Those have been running continuously for over 70 years. Now that we are looking at this intently, the fertilizer men or soil men are studying things as they never have studied them before. This is what we find, that the Rothamsted station has shown: The wheat in the unfertilized plot has decreased rather steadily from about 18 bushels per acre to about 9 bushels per acre. On the plots where complete fertilizers have been used for each one of these 70 years the yield shows an increase over the check plot, a continuing increase for about 10 years, and then there is a sudden break, and the yield follows the check plot; that is, the increase is maintained, but as the check plot is decreasing so are the fertilized plots decreasing after the first 10 years in proportion to the decreasing yield of the unfertilized plot.

This matter has recently come out. It has not been recognized. Very recently a gentleman was here from the Rothamsted station to confer with us about these and other matters, and I said, "You, in your wisdom, thought you could establish a method or could find out a method 70 years ago, a treatment which, if projected, would continue to serve you throughout all time. You find now that over a paltry 10 years you obtained an increase, but that since that time your soils have been going down." Now, as I said, the English gardener has met that situation by a change of method of handling his soil. The English gardener started, or the English farmer, 300 years ago, with an average yield of 12 bushels of wheat per acre. If he had adopted the Rothamsted scheme at that time he would have gone up to a certain amount and then he would have gone down. Now, instead of that, he has continued to go up; he has not been satisfied with the methods that he was using 300 years ago, but he has changed his methods so the yield on the English farm as increased from 12 busels, 300 years ago, to 32 bushels at the present time, and they have done better than they have done at the Rothamsted experiment station, by meeting the conditions.

Now, I said to this gentleman, "What are your experiences during the 70 years? Look back and tell me what it is you have noted?" He said there have been great changes in the appearance of the soil; there have been changes in the character of the weeds, of native vegetation. Some of them have become so foul with weeds that we can not handle them. We have to get laborers to pick the weeds out by hand, and some of the soils have run together where nitrate of soda has been used, and where the soils have run together during these 70 years they are less easily worked. I said, "Now, an English gardener would have seen those changes as they came up; he would not have waited 70 years; he would have met the situation, he would have seen those indications of change and would have remedied it." That is the difference.

Mr. GREENE. What I wanted principally to get at was whether you people are now satisfied yourselves, by such experience as has been had, that with the constant fertilization and refertilization of a given plot of ground under the old method in which the real fertilizer compound is a comparatively small percentage and the rest is a great vehicle to convey it, the addition of that useless matter from other soils from other places, such as sand, eventually accumulates in such proportion on the soil that it changes the character of the soil and therefore ought to lead to new kinds of fertilization of it.

Dr. WHITNEY. I would not say that; we have no reason to say that.

Mr. GREENE. Then are we as laymen to be satisfied that so far as the present knowledge runs in the chemistry of the earth, the great laboratory that the farmer employs has arrived at an approximate safe standard so far as we can see, as to the use of certain elemental chemical compounds?

Dr. WHITNEY. Yes.

Mr. GREENE. And is not likely to vary from them?

Dr. WHITNEY. There will be some variation, but we think, after our experience in all these years, that this is a safe thing. We may improve them; I have no doubt in the world that we will improve them. This is just the first step in our knowledge of the soils. We know that these fertilizers increase the yield, but we do not know how they increase it. That is a very important study, the question of how the fertilizers get on the soils. That is a very important subject that we have got to understand.

Mr. GREENE. That leads to the only question that I could propose to you, with my limited information, that might give me light on the present problem. Have we reason to expect that for the century ahead of us we shall depend upon nitrates?

Dr. WHITNEY. Yes; we have.

Mr. GREENE. That at least is an elementary proposition?

Dr. WHITNEY. Yes. We will depend on nitrates or phosphoric acid, and on potash.

Mr. GREENE. And the changes are likely to be such derivatives of certain chemicals of that character, or a form of adaptation and mixture, or their application?

Dr. WHITNEY. Yes; those are the changes.

Mr. GREENE. The basic will possibly be the same?

Dr. WHITNEY. That is what we believe.

Mr. GREENE. So that this present contract, which appears very attractive for the manufacture of nitrates, is not likely to become depreciated in the course of time by some subsequent discovery of science as will beyond question put that product out of further use?

Mr. WHITNEY. No; we do not see any signs of it.

Mr. GREENE. I believe you said you were not familiar with the mechanical side of the proposition down there and as to whether Mr. Ford would probably be able to follow up those changes, you do not feel qualified to speak?

Dr. WHITNEY. No; I know nothing about his plans.

Mr. PARKER. Dr. Whitney, you spoke of the good experience of the English farmer. I have always understood that the English farmer got nitrogen by rotation of crops and stall feeding of cattle. Does he?

Dr. WHITNEY. Yes; he gets part of it in that way.

Mr. PARKER. He uses that much more than our farmers do, does he not?

Dr. WHITNEY. He uses it more intelligently.

Mr. PARKER. Our farmers neglect rotation of crops very much, do they not?

Dr. WHITNEY. Yes. Our farmers have been on their farms but a short time, too short a time to really become acquainted with their soil type. The English farmer has been on his farm through generations. They have come down on the same type of soil. Still more striking is the situation in the case of the Japanese farmer. The Japanese farmer values his oldest soils, and I asked one of them what he meant by old. I asked that question of a professor of the University of Tokyo, and he said, "Our history goes back to 6,000 years ago." They value the older soils more than they do the new ones, because they have a knowledge; they have that under control, and it is safer. The last census—that is, the census of 1910—showed that 54 per cent of our farmers had not been on their farms five years. See what a contrast that is. Less than five years on their farms! They can not have acquired that knowledge, that skill, that intuition, that control over their soil that is necessary in that time. Does that answer your question?

Mr. PARKER. It does; but yet it does not get to the point I would like to bring out. What are the methods they use; that is, the Japanese and the English? They are perfectly open, are they not?

Dr. WHITNEY. Oh, yes.

Mr. PARKER. Those methods have been successful, continuously, while the application of chemicals failed after 10 years?

Dr. WHITNEY. Yes.

Mr. PARKER. What are those methods?

Dr. WHITNEY. Those methods are the result of experience.

Mr. PARKER. What are they?

Dr. WHITNEY. It is intuition.

Mr. PARKER. What particular means do they use?

Dr. WHITNEY. No one can tell. It is like the care of an animal. A gentleman came to me not long ago with a sad tale about a Holstein cow from which he had been deriving seven gallons of milk a day, which was more than his family needed. It had gone down to less than a gallon a day. I asked him if his cow was sick or showed any signs of distress. He said no; that the cow was feeding all right. I said, "Have you changed your man?" "Yes," he said; "I remember about six months ago I changed." "Now," I said, "you had better get rid of the man you have and get back the man who understands the nature of that cow." It is a matter of experience. You can not lay down a line of development.

Mr. PARKER. I can ask you as to some of the methods I have heard of. What is the effect of the use of turnips and rutabagas on the soil?

Dr. WHITNEY. It changes the style of cultivation.

Mr. PARKER. Does it add either nitrogen or phosphorus or potash?

Dr. WHITNEY. No.

Mr. PARKER. As to the use of beans and peas; they add nitrogen, do they not?
Dr. WHITNEY. Yes; they are the leguminous crops.
Mr. PARKER. And add nitrogen in quite large quantities?
Dr. WHITNEY. Yes; in considerable quantities.
Mr. PARKER. Do they cost as much to use as the chemicals we buy?
Dr. WHITNEY. That is rather difficult to answer. If they can be raised, and if they are of value in themselves, it is all right. But when they are used as a seasonal crop and have in themselves no particular value, no market value, they do. For instance, if you grow cowpeas and give up the use of the land for an entire season to grow cowpeas, it would be cheaper to buy chemicals.
Mr. PARKER. Does not the English farmer always insist upon the rotation of crops?
Dr. WHITNEY. Oh, yes; but they have different ones for different types of soil.
Mr. PARKER. They have rotation of crops lasting through four or five years, have they not?
Dr. WHITNEY. Oftentimes they do.
Mr. PARKER. What about the Japanese?
Dr. WHITNEY. They also rotate their crops. They have a much more intense system of rotation. They often raise four crops on the same soil in a year.
Mr. PARKER. All different crops?
Dr. WHITNEY. Yes; different crops.
Mr. PARKER. Those methods do add nitrogen, do they not; that is, the use of cowpeas, etc.
Dr. WHITNEY. Yes.
Mr. PARKER. As to the stall feeding of cattle, that adds the nitrogen—that is, the use of manure?
Dr. WHITNEY. Just a moment. It is a question as to just what you mean. The stall feeding of cattle does not necessarily mean the adding of nitrogen from a source outside of the farm.
Mr. PARKER. I see that perfectly; but they add the nitrogen that goes into the crops that they eat?
Dr. WHITNEY. Yes.
Mr. PARKER. And some of that comes out of the air, does it not?
Dr. WHITNEY. If you have the leguminous crops, but if you take the ordinary pasture grasses and the grains grown on a farm and feed the animals with that you would get very little nitrogen.
Mr. PARKER. You save it?
Dr. WHITNEY. You save it, and you return it in a condition in which it is quite active.
Mr. PARKER. How about the phosphorus? Is there any phosphorus saved by stall feeding?
Dr. WHITNEY. Yes; you save all of the phosphorus taken up by the crop from the soil.
Mr. PARKER. How about potash?
Dr. WHITNEY. The same thing would apply; but you add nothing that comes from outside the farm unless you deliberately buy something and bring it in.
Mr. PARKER. I am speaking of the things not bought and brought in. They do add the nitrogen that comes from the leguminous crops?
Dr. WHITNEY. Yes.
Mr. PARKER. Do these English farmers who have had such a successful experience use much outside fertilizer, or do all of them go without it?
Dr. WHITNEY. They use fertilizers very freely.
Mr. PARKER. What about the Japanese?
Dr. WHITNEY. They are using fertilizers now.
Mr. PARKER. I mean in their olden days.
Dr. WHITNEY. No; there were no fertilizers at that time; that is, there were no fertilizers in the sense in which we understand them.
Mr. PARKER. I mean chemical fertilizers.
Dr. WHITNEY. No; there were not any.
Mr. PARKER. During the period of growth of the English production from 12 bushels to 32 bushels an acre did the English farmer use much fertilizer?
Dr. WHITNEY. He did not have it.
Mr. PARKER. And yet he made his crop grow from a yield of 12 bushels to a yield of 32 bushels an acre?
Dr. WHITNEY. Yes; the fertilizers that have come up in modern times have given us another and an additional method to use in increasing crops.

Mr. PARKER. I am speaking of the men who make the real progress, the English and Japanese farmers. The English farmer, when he was bringing up his production, did not use outside fertilizers, and the Japanese, when he was maintaining his production, did not use outside fertilizers?
Dr. WHITNEY. No.
Mr. PARKER. Are you familiar with the Haber process and the cynamid process, so far as the cost of material is concerned?
Dr. WHITNEY. No; not on a commercial scale.
Mr. PARKER. You do not speak, therefore, on the question as to whether nitrates can be made here so as to compete with the Chilean nitrates?
Dr. WHITNEY. No.
Mr. PARKER. Nor whether, by mechanical processes we can make potash to compete with the German potash?
Dr. WHITNEY. In a general way only.
Mr. PARKER. You can not speak as to the costs?
Dr. WHITNEY. No.
Mr. PARKER. The electrical furnace has to be used in some of these processes?
Dr. WHITNEY. Yes.
Mr. PARKER. Is it a cheap or expensive way of getting heat?
Dr. WHITNEY. It would depend largely on the cost of the power. We have operated an electrical furnace, and we are now operating a fuel furnace, and we have been studying the cost of production, but the cost of production in our laboratory experiments, of course, can not be applied to the commercial plant.
Mr. PARKER. In your laboratory experiments, how did the cost of the fuel compare with the cost of the electricity?
Dr. WHITNEY. The fuel is generally cheaper than electricity.
Mr. PARKER. How much?
Dr. WHITNEY. It is generally considered about half as much. But that all depends entirely upon what you pay for your power.
Mr. PARKER. But I am talking generally.
Dr. WHITNEY. In Hoboken, where we carried on some of our experiments, we were paying $25 per horsepower, and with that cost of power we considered that we could cut the cost of producing phosphoric acid something like half, and cut the cost of power something like half, if we used the fuel furnace.
Mr. PARKER. In producing phosphoric acid the fuel costs half as much as the other power?
Dr. WHITNEY. At those rates; yes.
Mr. PARKER. Do you know enough about the cost of making these materials you have mentioned to know whether they can be made so as to compete with the phosphate rock and the German potash?
Dr. WHITNEY. We believe they can.
Mr. PARKER. Have you any warrant, on a commercial scale, for saying that you can?
Dr. WHITNEY. I think we have.
Mr. PARKER. You have not mentioned that.
Dr. WHITNEY. I would rather not speak of that because I am not an authority.
Mr. PARKER. Who would be able to speak on that?
Dr. WHITNEY. Dr. Tolman has been in direct contact with that.
Mr. PARKER. He said yesterday, as I recall, that as far as he can understand, sulphate of ammonia could not be made at present at Muscle Shoals and compete with the sulphate of ammonia sold in the market.
Dr. WHITNEY. I do not believe we want sulphate of ammonia.
Mr. PARKER. He spoke of that as the simplest thing that could be made. These mixtures you have spoken of here have not been used in commerce, have they? They have not been used except in laboratory experiments?
Dr. WHITNEY. They have been used in field experiments, but they have never been available for use in commercial work.
Mr. PARKER. These are propositions you think might come in?
Dr. WHITNEY. Yes.
Mr. PARKER. That is all you can say about them?
Dr. WHITNEY. Yes.
Mr. CROWTHER. Doctor, there is some little difference, it seems to me, between the statement you made to-day and the statement made by Dr. Tolman yesterday, and by some of the other witnesses, in regard to the fact as to whether this plant at Muscle Shoals is presumed to make and was originally

constructed to make ammonium nitrate. The question has been asked several times, how much ammonium sulphate, which they say is a component part of fertilizer, can be produced there. You say you do not think we want any ammonium sulphate, that the advantage is in the more highly concentrated nitrogen product.

Dr. WHITNEY. Yes.

Mr. CROWTHER. Then we do not need them?

Dr. WHITNEY. I should not think so.

Mr. CROWTHER. It has been said that this plant has a capacity of 110,000 tons of ammonium nitrate, which was to be treated by sulphuric acid and developed into ammonium sulphate for fertilizer purposes.

Dr. WHITNEY. That is one way; that is the easiest way; it is the best known way.

Mr. CROWTHER. As I understand you, you said it was rather a wasteful procedure?

Dr. WHITNEY. That is my opinion.

Mr. CROWTHER. What is the use of starting in on what is acknowledged by authorities to be a very wasteful proposition?

Dr. WHITNEY. I think in working out their plans it will be a long while before they can get that into operation.

Mr. CROWTHER. I realize that.

Dr. WHITNEY. I have been working on these matters quite a little while. I made a statement before the Graham committee on war expenditures of the House (hearing before subcommittee No. 5 (Ordnance), 66th Cong., 2d sess., serial 6, pt. 50, p. 2878), and also made a statement before the Senate Committee on Agriculture and Forestry in hearings on the production of atmospheric nitrogen. This matter has been available, and all of us are thinking along these lines. I could not tell you what should be done without considering the whole thing. The methods available down there and the materials available down there and the fertilizer need, marketing possibilities and things of that kind are matters to be taken into consideration. I have only sketched before committees of Congress just the idea that the concentrated fertilizer has got to be adopted to dispose in the most ready way and the most efficient way of fixed nitrogen products. The ammonium nitrate is not a good fertilizer itself; it is not a satisfactory fertilizer. It will not mix in large proportion with our acid phosphate as we have it to-day. Cyanamid, as Dr. Tolman told you yesterday, is not a satisfactory fertilizer; because it will not mix with our fertilizer materials.

Mr. CROWTHER. Are these materials soluble; could they be used with a sprinkler?

Dr. WHITNEY. These concentrated fertilizers are.

Mr. CROWTHER. Then they could be used with sprayers, just as we use sprayers in orchards?

Dr. WHITNEY. Yes.

The CHAIRMAN. Will you kindly cite the title of the volume you referred to a moment ago, so it will be in the record?

Dr. WHITNEY. This is a copy of a hearing on the production of atmospheric nitrogen. The hearing was held before the Senate Committee on Agriculture and Forestry in the second session of the Sixty-sixth Congress, and this is in part 2 of that hearing, beginning April 8, 1920.

Mr. FIELDS. Doctor, what is the extent of our deposits of phosphate rock in the United States?

Dr. WHITNEY. Very great. The first deposit was developed in South Carolina. That was a small deposit, a river deposit. That has been practically used up; at least, they are not working it now very much. The Florida phosphate was next discovered. Those deposits are very large. The Tennessee deposits are also large, although not quite as available to the fertilizer-using country. Then there are the western phosphates, which are enormous. Nobody knows the extent of those. They are tremendous.

Mr. FIELDS. Have we large quantities of the potash shale you referred to in the United States?

Dr. WHITNEY. Yes; we have a great deal of the insoluble potash rock; not so much of the potash shale, perhaps, but we have a great amount of potash material that could be used. The difficulty has been the cost of handling it. It is low-grade material and is not worth working over by itself.

Mr. FIELDS In what section of the country is that found?

Dr. WHITNEY. You mean the potash shale?

Mr. FIELDS. Yes.

Dr. WHITNEY. It has never been mapped, particularly. There are known deposits in Alabama and Georgia, and there are deposits of shale near the Muscle Shoals that carry, as I understand it, about 8 per cent of potash. They have been called to our attention by the War Department. Then there are deposits in Illinois and throughout the country. Then there are the green sands of New Jersey, which carry about 7 per cent of potash. They were used as fertilizer in New Jersey before potash became so common and so cheap. These green sand marls were used, but they are so relatively insoluble that they can not carry the cost of transportation.

Mr. FIELDS. I know there are great quantities of shale in my own State of Kentucky, and I am wondering if this product is contained in all shales, or only in certain kinds.

Dr. WHITNEY. No; the composition of shale varies considerably. It is the high-grade potash shale that we want to get.

Mr. FIELDS. I have read that it is possible to produce gasoline from shale. If the process is perfected, this would probably be a by-product of the potash, would it not?

Dr. WHITNEY. That would depend. The oil-bearing shales are in different localities. They are also a class by themselves.

Mr. FIELDS. At any rate, we have advanced far enough with this subject to know that we have all the fertilizer compounds within the United States, if we will but develop them.

Dr. WHITNEY. Yes, sir.

Mr. FIELDS. And in the fertilization of the soil we are not dependent upon the products of foreign countries?

Dr. WHITNEY. No; we have the products here; but there is an exchange value. It is at present cheaper for us to get nitric acid from Chile and muriate of potash from Germany, because we have not developed our own processes here.

Mr. FIELDS. The process of development is what I am talking about. It is possible for us to develop it within the United States?

Dr. WHITNEY. Yes.

Mr. FIELDS. What is the annual increase in the demand for fertilizer, Doctor?

Dr. WHITNEY. It is rather difficult to say. The best figures we have show that it is about 7½ per cent per annum.

Mr. FIELDS. Have you made an estimate of the annual percentage of the depreciation of the soil that is under cultivation—that is, without the use of fertilizer, I mean?

Dr. WHITNEY. No; we have not. We have made a few experiments that show that on certain soils of the United States the yields of our principal crops are increasing.

Mr. FIELDS. Yes; and I understand from my study of the subject that it is possible to increase the production of the soil by rotation of proper kinds of crops, proper plowing of the soil, etc.

Dr. WHITNEY. Yes; and better methods. That has counted for more in the present improved state of agriculture in England than anything else. It is better methods, including tillage, drainage, rotation, selection of seed, keeping up live stock, and things of that kind, that have increased production.

Mr. FIELDS. It is possible that our failure to realize earlier the necessity of the fertilization of the soil has been due to the fact the soil was new and the farmers had a virgin soil to cultivate and did not realize that it was then or would become necessary in the future to employ fertilizer so as to keep up their production.

Dr. WHITNEY. The farmer has felt the pinch of necessity. The great thing that stirred up the English agricultural interests was the pinch of necessity. When they were growing 12 bushels of wheat it was during the Baronial period, when the country was not so thickly settled as this country is or was 10 years ago. They had about 3,000,000 people in England. But at the close of the Baronial period, when they began to acquire ownership of the land, then they were unable to move as they had been doing before, because, from all accounts, during the Baronial period the peasants moved, constantly shifting their homes, and their lands would get foul with weeds, and their yields would go down, and they would move their garden or their fields to some other locality.

But with the desire for settlement and the acquiring of title to their lands, they began to feel the pinch of necessity, and they had to produce more per acre because they did not have the increased acreage to take up.

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Mr. FIELDS. Is it not a fact that practically every State of the Union now is feeling, as you say, the pinch of necessity for fertilizer to the same extent?

Dr. WHITNEY. Yes; we are feeling that, but it is not so very stringent yet.

Mr. FIELDS. But with an increase of 7½ per cent per annum it will be felt more and more each year?

Dr. WHITNEY. Yes. In the Congressional Record of January 7, 1921, Senator Smith of South Carolina published a letter that I had sent out to the commissioners of agriculture and the directors of the experiment stations in regard to what they thought of the necessity for fixed nitrogen compounds, especially those that could be obtained through the Muscle Shoals method. It might interest you, Mr. Chairman, to have that information in your record.

Mr. FIELDS. I will ask, Mr. Chairman, that that be put in the record at this point, so that we may have the benefit of it in considering this question.

The CHAIRMAN. Without objection, the letter will be inserted in the record.

Dr. WHITNEY. In this connection I estimated at the time that we were using 227,888 tons of ammonia. I estimated that if the country as a whole used fertilizers in proportion to the use in Georgia we would require 751,945 additional tons of ammonia. The use in Georgia, the intensity of the use of commercial fertilizers I show in this letter to be 160 pounds of fertilizer per acre of land in crops.

Now, the intensity of the use of fertilizer in Germany at that time was 180 pounds of fertilizer per acre of land in crops; in England it was about 160 per acre of land in crops. So that the intensity of use in Georgia was about the same as English practice.

I show furthermore that there were seven States that were using fertilizer more intensively than Georgia, including Maine, and quite a number of other States mentioned in the letter. Based on those figures, which I thought were fair because according to our own methods of use it was not thought excessive compared with the French, German, and English pounds used. If we should extend the use of fertilizer over the remaining acres of land in crops it would require 751,000 tons increase over the 227,000 tons we are now using. I think that is a conservative figure, and yet it is looking long into the distance.

(The letter above referred to is as follows:)

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, August 14, 1920.

DEAR SIR: The Bureau of Soils would like to have your opinion on certain important problems connected with the fertilizer industry of the country, and I am inclosing a list of questions which I should be very glad to have you, after careful consideration, answer and return.

The application to the soil of the modern fertilizer materials, which started about 60 years ago, has been one of the important means of increasing the acre yields of crops. It has grown to large proportions, especially in Europe and in the United States.

In this country the supplies of potash have been obtained mainly from Germany, phosphate rock mainly from Florida and Tennessee, and ammonia, the most costly ingredient, has been derived in part from nitrate of soda imported from Chile, from sulphate of ammonia obtained from the by-product of coke ovens and from city gas works, and by the use of castor pomace, cottonseed meal, animal tankage, dried blood, and fish scrap. Garbage tankage is also a small but rather important source; and factory wastes, such as leather scrap, horn shavings, etc., have been processed so that their nitrogen has been made available. The organic ammoniates have been valued not only for their nitrogen supply but also as containers for the minerals that have been used.

Some 20 years ago the world was startled by a statement made by Sir William Crooks before the Royal Society of England that the future of agriculture and food supply of the world was threatened by the relatively decreasing supply of ammoniates. Since then the scientists of the world have been actively studying methods for the fixation of atmospheric nitrogen for an independent source of nitrogen supply for fertilizers.

It has been foreseen by many that if we are to increase the food supply with the increasing demand for food the fertilizer industry must eventually be put on a chemical basis; that is, while use will always be made of wastes and by-products for fertilizer, the industry must be able to look for a dependable supply to chemical plants manufacturing fertilizer materials as their primary product. The European war has sharply emphasized the importance of this

subject and has tended to bring about changes in the fertilizer industry much quicker than they would otherwise have developed. The increasing demand for meat and animal products has resulted in the increasing use of the organic ammoniates for direct feeding purposes, with the result that the organic ammoniates to-day are hard to obtain for fertilizers, as they bring higher prices for feeding stuffs and their direct use for feeding purposes is saner than their indirect use as fertilizers. The war has also stimulated the production of fixed-nitrogen products, so that the world is equipped to-day to fix the nitrogen of the air and make it available for fertilizer material.

Under the stress of war conditions the War Department has erected a great nitrogen fixation plant at Muscle Shoals, Ala. The primary product made at the Muscle Shoals plant is calcium cyanamide. This is a basic nitrogenous product, which is capable of being transformed into the commercial fertilizer material bearing the trade name of "cyanamid." The latter is a product in whose use difficulties have been encountered, and whose action under certain conditions is deleterious. Cyanamide is not an ideal substance to use in mixed fertilizers, as it can only be mixed in small proportions with the ordinary form of acid phosphate. The Muscle Shoals plant is equipped to convert the nitrogen of the crude calcium cyanamide into ammonia and to oxidize part of the ammonia into nitric acid, from which ammonium nitrate may be obtained, a very important material for explosives. Ammonium nitrate gives good results when used as a fertilizer. It is rather deliquescent and therefore somewhat objectionable for this reason as an article of commerce. It is likewise not adapted for use except in small proportions in mixed fertilizers, as it reacts with the acid phosphate and readily decomposes. One can convert the nitrogen of crude calcium cyanamide into ammonia and absorb it in sulphuric acid, making ammonium sulphate, and this is the plan, in case Congress authorizes the operation of the plant in peace times for the manufacture of fertilizer material. How it shall dispose of this product and the price to be charged with reference to the commercial prices is a matter which need not be discussed here.

The Bureau of Soils has been working for a number of years on the problem of fixing atmospheric nitrogen and also on the conservation of our phosphate deposits. Ordinarily the phosphate rock is treated with about an equal weight of sulphuric acid to convert the insoluble calcium phosphate into a soluble form of calcium phosphate and a considerable amount of gypsum. This product (acid phosphate) is being sold to the farmers usually in a form which contains 16 per cent of available phosphoric acid (P_2O_5). The sulphuric-acid treatment requires a rock of rather high purity and low in iron, alumina, and carbonate of lime. In getting out rock of sufficient purity for the acid-phosphate manufacturers about two-thirds of the rock that is mined is thrown on the dump as waste material.

The Bureau of Soils has been working for several years to conserve and use this wasted phosphate material. If cheap water power were available, the wasted phosphate rock could be smelted in an electric furnace and collected as a liquid and the phosphate extracted, resulting in the saving of most of the rock now mined and at present thrown away. In the absence of cheap water power the bureau is experimenting with a furnace using oil as a fuel, and we think that the cost of production can be brought down to a point where the phosphoric acid can be produced in competition with the sulphuric-acid treatment.

This phosphoric acid, like the ammonia gas from the Muscle Shoals plant, is in itself not adapted to fertilizers and is not, strictly speaking, a fertilizer material, as neither of them can be used in this form. The ammonia gas has to be fixed by absorption in an acid, and the phosphoric acid has to be fixed by neutralizing it with a base. The obvious thing to do with the phosphoric acid is to fix it by passing in ammonia gas and form ammonium phosphate, which is a concentrated and valuable fertilizer material. Here the proposals of the War Department and of the Bureau of Soils come together. The ammonia to be produced at Muscle Shoals will need to be fixed, and phosphoric acid will be more valuable for this purpose than sulphuric acid, while such phosphoric acid as may be produced in plants adopting the furnace method, which the Bureau of Soils has been developing, will need to be fixed, and the Muscle Shoals ammonia will be most suitable for this purpose.

Ammonium nitrate can probably be mixed in all proportions with ammonium phosphate. Furthermore, it seems likely that potash can be put into the mixture in the form of potassium phosphate which, it is believed, could also be mixed in any proportion with ammonium nitrate and with ammonium phos-

phate. This would give the most concentrated fertilizer that it is possible to make.

There are two important questions to solve before such investigative work can be applied on a commercial scale. If concentrated fertilizers are made on a commercial scale, will the farmers be willing to use them, and can the country absorb the amount of ammonia that can be produced by the Muscle Shoals plant without disorganizing existing commercial sources?

The farmers have always been inclined to criticize the fertilizer manufacturers for selling fertilizers that contain a considerable amount of valueless material which they class as filler. When they buy acid phosphate they only get 16 per cent phosphoric acid figured as P_2O_5. The rest is inert and more or less valueless material. When they purchase ammonium sulphate, the ammonia equivalent is not over 25 per cent; in nitrate of soda, the ammonia equivalent is not over 20 per cent; in muriate of potash, the actual potash equivalent is not over 50 per cent; and in cottonseed meal, the ammonia equivalent is about 8 per cent. If there was put on the market a concentrated fertilizer made of the materials above described a standard formula containing 2 per cent of nitrogen, 8 per cent of phosphoric acid, and 2 per cent potash would contain in the concentrated form and, without filler, about 12 per cent of nitrogen, 49 per cent of phosphoric acid, and 12 per cent of potash. If this were diluted to correspond with the formulas the farmer has been accustomed to buy, it would require nearly 84 per cent of filler. A fertilizer containing 10 per cent of nitrogen, 8 per cent of phosphoric acid, and 4 per cent of potash in concentrated form would carry 24 per cent nitrogen, 19 per cent of phosphoric acid, and about 10 per cent of potash. It would require to dilute it to the present concentration 59 per cent of filler.

In applying concentrated fertilizers considerably more care has to be exercised than in applying the ordinary commercial fertilizers of commerce. The farmer would save freight on the filler unless he desired to have the fertilizer manufacturer put in the filler at the factory. The railroads would save car space if concentrated materials were shipped. If the farmer purchased a concentrated fertilizer he could apply it as such, but he would have to use more care and not let it come in direct contact with the seed, at least if it were applied in the drill. He could dilute the concentrated fertilizer by adding dry sand or finely divided and dried peat or soil of any kind, or he could dilute it with water, if he had conveniences to apply the fertilizer in a spray. The question is whether the farmer would adapt himself to concentrated fertilizers and whether there would be a market for such material.

I have asked you to express an opinion as to whether the country could absorb the ammonia that could be produced at the Muscle Shoals plant without seriously disturbing the present commercial production of ammonia in its different forms. In order that you may judge this question intelligently let me say a few words about the present supplies and present markets for fertilizers.

The rated capacity of the Muscle Shoals plant is 56,716 tons of ammonia (NH_3) per annum. It is not contemplated for the present, however, to run the plant at full capacity, as only 8 of the 10 units will be run at any one time. This would mean a capacity of 44,440 tons per annum of ammonia, equivalent to 168,000 tons of ammonium sulphate. If this ammonia, instead of being made into ammonium sulphate, were made into concentrated fertilizers, the output would be equivalent to some 2,000,000 tons of mixed fertilizer of average grade, but it would, of course, be far less in actual weight, though quite the equivalent in crop-growing value, as they would contain no inert material.

In 1909 the production of ammonium sulphate was about 106,000 tons, while in 1904 the production was something less than 55,000 tons. The present rated capacity of the by-product coke ovens and city gas plants is probably between 500,000 and 600,000 tons of ammonium sulphate per annum. The actual production in 1919 was only about 423,000 tons, of which about 140,000 tons were exported. On account of the coal strike, the railroad strike, and the car shortage the supply has been inadequate, and would have been inadequate if the 140,000 had not been exported. It is believed that the maximum recovery of ammonium sulphate from coke ovens may in the course of a few years be increased to 700,000 tons per annum, but that this is the limit of capacity unless the demand for pig iron is constantly and largely increased. The increased production of ammonium sulphate has been used to a considerable extent in replacing the ammonia from the organic ammoniates which have been rapidly absorbed as feed.

From a thorough survey of the fertilizer industry made by this department in 1917 and 1918 it appears that of all the materials sold by the fertilizer manufacturers in 1917, 3.3 per cent was ammonia. This figure has been used in the preparation of the table which follows.

It has been estimated by the War Department that for 15 years (1899–1914) the annual rate of increase of fertilizer production was 7½ per cent compounded annually; that is to say, that each year the production of fertilizers was approximately 7½ per cent larger than for the year before. The capacity of the coke ovens has nearly reached its maximum. The proportion of the organic ammoniates available for fertilizers is rapidly decreasing. The importation of nitrate of soda is limited by the shipping facilities, so that the time must soon come, if in fact it has not already arrived, when the country must turn to the use of fixed-nitrogen products to supply the ammonia for the increasing amounts of fertilizers that will be needed.

The situation may be presented from another point of view. The war interfered with the fertilizer trade as it has with many other industries. If the normal increase of 7½ per cent yearly in the fertilizer output had continued from 1914, the production of fertilizer in 1919 would have been about 10,500,000 tons. In 1914 the production is given as 7,367,528 tons, in 1915 it was 5,586,212, in 1916 it reached its low point of 5,407,549 tons. From then it began to rise. In 1917 it was 6,224,543 tons, in 1918 it was 6,779,743 tons, in 1919 it was 6,927,322 tons, or somewhat less than 1914. It would appear, therefore, that the production in 1919 was less than it would have been on the basis of the normal increase by some 3,649,717 tons.

This decrease of fertilizer production during the war period was not due to lessening demand, but was due to the inability to obtain material. The foreign potash supply was cut off, the phosphate rock could not be mined or transported, the sodium nitrate and ammonium sulphate were diverted in large part to munitions, and the organic ammoniates were used to a large extent for feeding purposes. In 1919 the potash situation had not recovered its normal volume. The strikes in the Florida phosphate fields and the car shortage made acid phosphate hard to obtain, and it was found that the organic ammoniatets had not been released by the feeders. If the fertilizer manufacturers had been required to produce 3,500,000 tons more fertilizer in 1919 than was actually produced, it is not apparent where the ammonia supply would have been drawn from. The phosphate rock that was not used for fertilizers is still in the ground, the potash that was not used is still in the mines, but the organic ammoniates have been completely used up, either as fertilizers or as feeds. It seems apparent, therefore, that the country has been short of fertilizer material for the past five years, and if this shortage is to be made up and provision made for a resumption of even the normal annual increase additional sources of ammonia must be found. The only place to look for this increased supply of ammonia is in fixed-nitrogen products.

The latest comparable figures showing the intensity of use of commercial fertilizers in European countries and in the United States pertain in 1912. From the figures obtainable for that period it appears that Germany was using 188 pounds per acre of land in crops; Great Britain, 162 pounds of fertilizer per acre of land in crops: France 79 pounds; Italy, 77 pounds; the United States, 40 pounds; Spain, 31 pounds; and Russia in Europe, 6 pounds per acre.

The following table shows the acres in crops as determined by the Bureau of Crop Estimates (Crop Reporter for March, 1920), the tonnage of fertilizers sold in each State (the American Fertilizer Handbook, 1920), the estimated amount of ammonia contained therein (estimate, 3.3 per cent), and the additional amount of nitrogen that would be required to bring the practice in the several States at least up to the present rate of use in Georgia. There are nine States that use more fertilizers per acre of land in crops than Georgia. Georgia was selected as a basis of comparison, because the intensity of use is nearly the same as in the United Kingdom, and is less than the practice in Germany in 1913, and because of the general agriculture practiced as against the specialized use in Florida and in some of the other coast States.

Total acreage in crops in 1919, the tonnage of fertilizers sold in each State, and the additional amount of ammonia required to bring the intensity of use at least up to the present practice in Georgia.

State.	In crops.	Fertilizer used in 1919.		Ammonia used.	Additional required.
		Total.	Per acre in crops.		
New England:	*Acres.*	*Tons.*	*Pounds.*	*Tons.*	*Tons.*
Maine	1,516,000	156,000	205	5,148	.....
New Hampshire	570,000	14,000	49	462	1,043
Vermont	1,206,000	18,000	30	594	2,589
Massachusetts	616,000	61,000	198	2,013	.....
Rhode Island	84,000	9,000	214	297	.....
Connecticut	528,000	65,000	246	2,145	.....
Total	4,520,000	323,000	143	10,659	3,632
Middle Atlantic:					
New York	8,382,000	410,000	98	13,530	8,598
New Jersey	1,168,000	149,485	256	4,933	.....
Pennsylvania	8,344,000	340,000	81	11,220	10,808
Total	17,894,000	899,485	100	29,683	19,406
East North Central:					
Ohio	11,731,000	305,236	52	10,073	20,897
Indiana	12,661,000	241,000	38	7,953	25,472
Illinois	21,249,000	45,000	4	1,485	54,612
Michigan	9,178,000	103,264	22	3,408	20,822
Wisconsin	9,529,000	10,000	2	330	24,827
Total	64,348,000	704,500	22	23,249	146,630
West North Central:					
Minnesota	16,093,000	5,000	.6	165	42,321
Iowa	21,732,000	5,000	.5	165	57,207
Missouri	15,190,000	91,000	12	3,003	37,099
North Dakota	17,648,000	1,000	.1	33	46,558
South Dakota	15,284,000	3,000	.3	99	40,251
Nebraska	19,021,000	500	.08	17	50,198
Kansas	23,436,000	16,937	1	559	51,312
Total	128,404,000	122,437	2	4,041	324,946
South Atlantic:					
Delaware	539,000	30,398	115	1,003	420
Maryland	2,812,000	174,500	150	5,758	346
Virginia	4,905,000	421,484	172	13,909	.....
West Virginia	2,373,000	63,000	53	2,079	4,186
North Carolina	7,889,000	961,238	244	31,721	.....
South Carolina	6,989,000	1,033,887	295	34,118	.....
Georgia	12,386,000	990,919	160	32,700	.....
Florida	1,452,000	250,613	345	8,270	.....
Total	38,843,000	3,926,039	202	129,558	4,952
East South Central:					
Kentucky	6,891,000	193,000	30	3,399	14,793
Tennessee	7,092,000	109,366	31	3,609	15,114
Alabama	9,742,000	297,903	61	9,831	15,888
Mississippi	8,063,000	110,000	28	3,630	17,656
Total	31,788,000	620,269	39	20,469	63,451
West South Central:					
Arkansas	7,276,000	64,427	17	2,126	17,083
Louisiana	4,950,000	97,724	39	3,225	9,843
Oklahoma	14,342,000	40,000	6	1,320	36,543
Texas	25,902,000	46,000	4	1,518	66,863
Total	52,470,000	248,151	9	8,189	130,332
Mountain:					
Montana	4,826,000	1,000	.04	33	12,708
Idaho	2,259,000	500	.5	17	5,947
Wyoming	1,669,000	500	.6	17	4,389
Colorado	5,027,000	1,000	.4	33	13,238
New Mexico	1,922,000	1,500	2	50	5,024
Arizona	544,000	500	2	17	1,419
Utah	1,055,000	1,000	2	33	2,747
Nevada	436,000	1,000	5	33	1,118
Total	17,736,000	7,000	.8	233	46,590

Total acreage in crops in 1919, etc.—Continued.

State.	In crops.	Fertilizer used in 1919.		Ammonia used.	Additional required.
		Total.	Per acre in crops.		
Pacific:	*Acres.*	*Tons.*	*Pounds.*	*Tons.*	*Tons.*
Washington	3,891,000	4,000	3	132	10,140
Oregon	2,850,000	7,500	5	247	7,277
California	6,065,000	43,126	14	1,423	14,589
Total	12,806,000	54,626	8	1,802	32,006
Grand total	368,800,000	6,905,507	40	227,883	771,945

We have always thought of the agriculture at least of northern Europe as being of the most intensive kind with the use of a relatively large amount of fertilizers. It appears from this table, however, that already in 10 of the States of this country the use of fertilizers is more intensive than in the European countries.

The following table shows the fertilizer tonnage in 1913 and in 1919 as taken from the American Fertilizer Handbook, together with the increase or decrease in 1919 based upon the 1913 figures:

State.	Fertilizer tonnage.		Per cent.	State.	Fertilizer tonnage.		Per cent.
	1913	1919			1913	1919	
New England:				South Atlantic—Continued.			
Maine	160,000	156,000	−2	South Carolina	918,336	1,033,887	12
New Hampshire	18,000	14,000	−22	Georgia	1,120,693	990,919	−11
Vermont	14,500	18,000	24	Florida	213,728	250,613	17
Massachusetts	51,000	61,000	20	Total	3,756,490	3,926,039	4
Rhode Island	9,000	9,000	.....	East South Central:			
Connecticut	62,000	65,000	4	Kentucky	75,000	103,000	37
Total	314,500	323,000	3	Tennessee	84,060	109,366	30
Middle Atlantic:				Alabama	474,730	297,903	−37
New York	380,000	410,000	8	Mississippi	128,050	110,000	−14
New Jersey	156,661	149,485	−4	Total	761,840	620,269	−18
Pennsylvania	340,000	340,000	.....	West South Central:			
Total	876,661	899,485	2	Arkansas	52,000	64,427	23
East North Central:				Louisiana	98,778	97,724	−1
Ohio	183,476	305,236	66	Oklahoma	18,000	40,000	122
Indiana	193,899	241,000	24	Texas	75,500	46,000	−39
Illinois	30,000	45,000	50	Total	244,278	248,151	1
Michigan	57,985	103,264	78	Mountain:			
Wisconsin	4,000	10,000	150	Montana	800	1,000	25
Total	469,360	704,500	50	Idaho	200	500	150
West North Central:				Wyoming	200	500	150
Minnesota	3,500	5,000	42	Colorado	500	1,000	100
Iowa	3,500	5,000	42	New Mexico	200	1,500	650
Missouri	60,000	91,000	51	Arizona	600	500	−16
North Dakota	500	1,000	100	Utah	1,000	1,000	.....
South Dakota	700	3,000	328	Nevada	800	1,000	25
Nebraska	500	500	.....	Total	4,300	7,000	63
Kansas	7,380	16,937	129	Pacific:			
Total	76,080	122,437	61	Washington	1,500	4,000	166
South Atlantic:				Oregon	4,500	7,500	66
Delaware	50,000	30,398	−39	California	36,000	43,000	19
Maryland	169,000	174,500	3	Total	42,000	54,500	30
Virginia	412,434	421,484	2	Grand total [1]	6,541,164	6,905,507	5
West Virginia	31,852	63,000	97				
North Carolina	840,447	961,238	14				

[1] Exclusive of Porto Rico.

NOTE.—Increase or decrease (−) in 1919, compared with 1913.

From the first table showing the intensity of use and from the second table showing the actual sales it would appear that the intensity of use in the so-called fertilizer States has already reached the maximum application. It has long appeared to students of agriculture that the future development in the fertilizer industry would be in its extension westward into the so-called corn and wheat States and the Central and Southwestern States. The increase shown both by tonnage and by percentage in the East North Central States as compared with the New England, the Middle Atlantic, and the South Atlantic States is significant and appears to show the westward trend in the use of fertilizers while individual States, such as Oklahoma, Arkansas, Kentucky, Tennessee, and Missouri, appear to emphasize the same fact.

With this data before you and the knowledge of local conditions, I should be very glad to have you give me your best judgment in answering the questions on the inclosed questionnaire. The questions which the bureau has to answer and which we hope to be able more intelligently to answer from your questionnaire are as follows:

(1) If the Muscle Shoals plant operated by the Government or by private enterprise should within a period of three years be prepared to produce annually 168,000 tons of sulphate of ammonium, could this country absorb this, either for straight application to the soil or in mixed fertilizers, without seriously interfering with production by private capital?

(2) If the Muscle Shoals plant instead of producing sulphate of ammonium produced concentrated fertilizer materials such as ammonium nitrate, ammonium phosphate, and potassium phosphate, which could be mixed in many proportions by the farmers themselves or at Muscle Shoals or by fertilizer manufacturers, would the farmers be willing to use such concentrated materials either in mixed fertilizers or in straight application just as he employs nitrate of soda, ammonium phosphate, acid phosphate, and would he take the pains which he must now take with nitrate of soda to use it so that it will not damage the crop by coming undiluted into intimate contact with the seed at planting time?

(3) If the farmers would accept the concentrated form of fertilizers, could the country absorb the equivalent of 2,000,000 tons of fertilizers carrying 44,440 tons of ammonia in addition to what is now produced?

I have purposely refrained from discussing prices as these are relative and are dependent upon many conditions in the business world. It must be assumed that the fixed nitrogen products will have a relative value comparable with the ammonia derived from other natural sources.

Very truly, yours,

MILTON WHITNEY,
Chief of Bureau.

QUESTIONNAIRE.

1. With this information before you and your knowledge of local conditions, is it your opinion that if fertilizer material, especially the ammoniates, were produced in large amounts, through the operation of the Muscle Shoals plant, there would be a larger market in your State for fertilizers or fertilizer material; and if so, approximately how much greater than in 1919?

Increase, per cent, ———.

Decrease, per cent, ———.

2. If suitable methods can be developed for the manufacture of concentrated fertilizers at Muscle Shoals, would you favor the manufacture of ammonium sulphate, or of concentrated fertilizers, or of fertilizer materials at that point?

Ammonium sulphate, ———.

Concentrated fertilizers, ———.

3. If the Muscle Shoals plant, instead of producing sulphate of ammonium, produced concentrated fertilizer materials, such as ammonium nitrate, ammonium phosphate, and potassium phosphate, which could be mixed in any proportion by the farmer himself, or at Muscle Shoals, or by fertilizer manufacturers, would the farmer be willing to use such concentrated material either in mixed fertilizers or as straight applications just as he now employs the commercial grades of nitrate of soda, ammonium sulphates, acid phosphates, or other readily soluble fertilizer salts in straight applications, and would he take the pains to use it so that it will not damage the crop by coming undiluted into intimate contact with the seed at planting time?

Answer yes or no.

Please write on a separate sheet other information or discussion you desire to give and inclose in the penalty envelope without postage and return to the Bureau of Soils.

Name: ———.

Title: ———.

Post office: ———.

State: ———.

Please return to the Bureau of Soils, United States Department of Agriculture, Washington, D. C.

Following is the list of States, showing the consumption of fertilizers for the fiscal years ending in 1912, 1913, 1914, 1915, 1916, 1917, 1918, and 1919, compiled from the most reliable statistics that are obtainable. In some of the States there are absolutely no accurate figures available. For the States indicated by an *, estimates have been made based on information obtained from State officials and fertilizer manufacturers.

Fertilizer tonnage by States.

State.	Fiscal year ending—	1912	1913	1914	1915	1916	1917	1918	1919
		Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Alabama	Oct. 1	452,215	474,730	592,200	302,350	206,000	210,000	289,990	297,903
Arizona *	June 30	500	600	650	650	600	500	500	500
Arkansas	Dec. 31	50,000	52,000	84,850	26,396	65,600	58,500	88,500	64,427
California	June 30	50,000	36,000	39,471	31,540	29,415	43,964	32,036	43,126
Colorado *	Dec. 31	500	500	500	600	1,000	1,000	1,000	1,000
Connecticut *	...do....	48,000	62,000	74,000	80,000	73,000	78,000	80,000	65,000
Delaware *	...do....	30,000	50,000	55,000	45,000	45,000	50,000	54,000	30,398
Florida	...do....	187,927	213,738	240,812	208,782	212,250	214,088	197,954	250,613
Georgia	...do....	1,103,864	1,120,693	1,282,088	872,979	741,347	895,897	923,030	990,919
Idaho *	July 1	.....	200	500	500	500	500	500	500
Illinois *	Apr. 30	25,000	30,000	40,000	35,000	42,000	45,000	45,000	45,000
Indiana	Dec. 31	143,678	193,899	219,000	156,152	132,159	156,000	244,340	241,000
Iowa *	Apr. 30	2,500	3,500	4,200	5,100	5,000	5,000	5,000	5,000
Kansas	June 30	5,000	7,389	9,460	10,060	7,940	7,600	8,000	16,937
Kentucky *	Dec. 31	65,000	75,000	83,000	85,000	62,000	93,000	128,000	103,000
Louisiana	Aug. 31	75,555	98,778	90,588	72,420	96,426	98,264	81,025	97,724
Maine *	Dec. 31	150,000	160,000	168,000	150,000	155,000	160,923	155,000	156,000
Maryland	...do....	160,000	169,000	183,350	168,000	154,000	191,900	173,000	174,500
Massachusetts *	Nov. 30	48,000	51,000	54,000	56,000	53,000	64,000	68,000	61,000
Michigan *	Dec. 31	51,000	57,985	60,000	65,000	70,000	91,455	78,000	103,264
Minnesota *	...do....	2,200	3,500	3,800	4,000	4,500	4,500	5,000	5,000
Mississippi	Oct. 1	119,710	128,050	127,400	85,414	75,667	76,717	104,700	110,000
Missouri *	Dec. 31	38,359	60,000	65,000	57,000	41,000	65,000	90,000	91,000
Montana *	No law..	700	800	900	1,000	1,000	1,000	1,000	1,000
Nebraska *	No law..	500	500	500	500	500	500	500	500
Nevada *	No law..	600	800	950	1,000	1,000	1,000	1,000	1,000
New Hampshire *	Apr. 30	15,000	18,000	20,000	16,000	18,000	20,000	18,000	14,000
New Jersey	Oct. 31	140,000	156,661	155,414	153,075	129,800	176,483	153,198	149,485
New Mexico *	No law..	200	200	200	500	500	500	500	1,500
New York *	Dec. 31	376,000	380,000	420,000	400,000	400,000	420,000	430,000	410,000
North Carolina	Dec. 1	695,705	840,447	872,820	647,188	650,000	849,728	921,962	961,238
North Dakota *	Dec. 31	500	500	550	600	700	1,000	1,000	1,000
Ohio	...do....	151,784	183,476	203,000	225,000	187,848	165,857	219,328	305,236
Oklahoma *	Apr. 30	10,000	18,000	29,000	25,000	20,000	21,000	25,000	40,000
Oregon *	Aug. 30	3,500	4,500	6,300	6,500	6,500	7,000	6,000	7,500
Pennsylvania	Dec. 31	318,716	340,000	381,900	316,319	268,455	334,309	340,898	340,000
Porto Rico *	June 30	20,000	18,836	18,164	20,000	37,725	45,767	40,811	21,815
Rhode Island *	Mar. 31	8,000	9,000	12,500	11,000	12,000	11,500	10,000	9,000
South Carolina	June 30	886,222	918,336	1,095,728	670,610	833,624	850,790	1,064,886	1,033,887
South Dakota *	July 1	300	700	1,000	1,500	1,500	2,500	2,500	3,000
Tennessee	Dec. 31	77,473	84,060	93,550	77,390	91,128	99,584	113,000	109,366
Texas	Sept. 1	45,000	75,500	77,400	17,500	39,845	40,500	58,000	46,000
Utah *	Dec. 31	700	1,000	1,200	1,500	1,000	1,000	1,000	1,000
Vermont *	June 30	12,000	14,500	18,000	13,500	15,000	14,500	16,000	18,000
Virginia	Dec. 31	372,108	412,434	437,808	406,077	369,520	496,217	430,549	421,484
Washington *	Mar. 31	1,400	1,500	2,400	3,000	3,000	4,000	4,010	4,000
West Virginia	Dec. 31	31,750	31,852	35,475	46,010	40,000	41,000	59,036	63,000
Wisconsin *	...do....	3,500	4,000	4,500	5,000	5,000	6,500	7,500	10,000
Wyoming *	No law..	150	200	400	500	500	500	500	500
Total	.....	5,981,016	6,560,345	7,367,528	5,586,212	5,407,549	6,224,543	6,778,743	6,927,322
Hawaii	June 30	70,000	67,000	80,000	70,000	65,000	80,000	64,000	71,000

SEPTEMBER 27, 1920.

Col. J. H. BURNS,
Nitrate Division, Ordnance Department, Washington, D. C.

DEAR COL. BURNS: In line with the cooperative work we have been carrying on concerning the operation of the Muscle Shoals plant, as well as the Haber process, and after consultation with you, I addressed a letter on August 14, 1920, to the commissioners of agriculture and directors of the experiment stations of the several States to obtain their opinions on certain phases of the problem. It seemed to me that they were in a position to advise in regard to fertilizer problems, as they either have charge of the administration of the fertilizer laws of the respective States or have been vitally interested through their investigational work in the general fertilizer problem.

In this letter I laid before them in some detail the present status of the fertilizer industry and the relative intensity of use in the several States, asking them to give their judgment, so far as their State is concerned, as to whether, and approximately how much, additional fertilizers would be used in their States in the event that a larger supply of fertilizer material, especially nitrogenous material, were made available through the operation of the Government plant, in order that I might determine whether the production of 168,000 tons of ammonium sulphate could be absorbed by the country without seriously upsetting the present industrial relations.

I sent these letters to representatives in 48 States. I have received up to date replies from 37 States. These 37 States represent 89 per cent of the tonnage of fertilizers in 1919. I sent out 85 letters and have received to date 46 replies.

Three States did not express an opinion as to whether or not there would be an increase in fertilizers used in these States if larger amounts of nitrogenous material were supplied. These States in 1919 had a total consumption of 22,937 tons out of a total of 6,927,322 tons used in all States in 1919. Three States which consumed 29,000 tons looked for no increase in use in their States. Eight States which consumed 1,053,102 tons in 1919 expressed the opinion that there would be an increased use, but did not state how much. Twenty-three States which consumed 5,070,744 tons gave the probable per cent of increase. The average weighted increase to be expected, according to the judgment of the officials of these 23 States, is about 17.2 per cent. This, applied to the total tonnage of 1919, would indicate that 1,191,499 additional tons of fertilizers could have been consumed if the fertilizer material had been available. If we use the factor 3.3 per cent for the ammonia content, it would be equivalent to 157,276 tons of ammonium sulphate. This is close to the estimated capacity of the Muscle Shoals plant. In no case was any doubt expressed by the officials that the product of the Muscle Shoals plant could be absorbed without serious disturbance to commercial production.

My opinion, previously expressed to you, that the production of 168,000 tons of ammonium sulphate could be absorbed into the fertilizer industry of this country is thus confirmed, as, if I had taken their maximum estimates, the amount stated by them which could be used would considerably exceed this figure.

The general opinion of the correspondents is that there is at present and has been for a long time a serious shortage of fertilizer materials, especially of the nitrogenous materials, and they seemed to feel very strongly that the operation of the Muscle Shoals plant, with the production of fixed-nitrogen compounds, would be of great benefit to agriculture.

I called the attention of the State officials to some of the difficulties in the use of fixed-nitrogen products, such as cyanamid and ammonium nitrate, in the system that has always prevailed in this country of depending largely upon mixed fertilizers. I also called attention to the waste of phosphate-rock material in the present system of acidulating with sulphuric acid. I suggested that this waste could be eliminated by the preparation of liquid phosphoric acid from mine-run material and from low-grade rock, which could then be fixed by introducing potash or ammonia, with the formation of potassium phosphate or ammonium phosphate, to which ammonium nitrate could be added without chemical change taking place. I told them that in my judgment the time had come to put the fertilizer industry on a real chemical basis.

After laying before them such details and such opinions of my own, I asked them whether, in their judgment, the Muscle Shoals plant should produce ammonium sulphate or should produce concentrated fertilizer material of the above kinds. Four States, which used in 1919 a total of 17,000 tons, expressed no opinion on this point. Two States, which used 46,500 tons, advised that ammonium sulphate be produced. Thirty-one States advised the manufacture of concentrated fertilizer materials. These 31 States represent practically 99 per cent of the tonnage of 1919 from those States reporting and about 87 per cent of the total tonnage of all States in 1919.

I further asked my correspondents if in their judgment, if concentrated fertilizers are produced, the farmers would take pains to apply them with the same care that they now have to exercise in applying straight nitrate of soda or acid phosphate so that they will not come into direct contact with the seed at planting time. All of the correspondents who favored the production of concentrated fertilizers expressed the opinion that with suitable warning and a campaign of education the farmers could and would use concentrated fertilizer materials safely.

I trust this information will be of interest and value to you.

Very truly, yours,

MILTON WHITNEY,
Chief of Bureau.

Mr. FIELDS. Doctor, from your study of the subject, what has been the average increase in the production of corn by the use of fertilizer? If you will put in the hearing a table showing the average increase in the yield of the staple crops of the country by the use of fertilizer it will be of great assistance to the committee.

Dr. WHITNEY. I think it will be very difficult to state that in any fair way. We have not the information in regard to general use. We have the information in regard to some of the fertilizer experiments that have been carried on in this country, but it is hardly fair to apply those to general use.

Mr. FIELDS. Any figures you could give us to show the benefit of fertilizer applied to the soil in the production of crops would help us.

Dr. WHITNEY. I will try to get up some data that will be satisfactory.

Average increase per acre of all fertilizer experiments in the United States published up to 1910, with the number of experiments reported up to that time.

Fertilizer.	Corn.		Wheat.		Potatoes.		Cotton.	
	Number of experiments.	Average increase in bushels.	Number of experiments.	Average increase in bushels.	Number of experiments.	Average increase in bushels.	Number of experiments.	Average increase in pounds.
Mineral fertilizers:								
Single fertilizer materials containing ammonia, from mineral sources, acid phosphate, or potash	1,622	3.7	799	2.0	295	10.5	559	54.0
Minerals in combination of two of the above elements	1,036	11.0	378	4.6	254	29.6	280	82.5
Complete mineral fertilizer containing all three of the above elements	1,233	14.5	534	8.9	226	48.5	311	169.4
Organic fertilizers:								
Single organic fertilizer material	302	4.6	151	2.2	60	23.7	209	72.0
Organic fertilizer material in combination with acid phosphate or potash	364	7.2	161	3.7	128	49.3	469	109.4
Complete fertilizer containing ammonia in organic form, acid phosphate, and potash	1,037	10.8	377	7.5	269	53.5	730	130.3

These summaries include all published records regardless of the character of the soil, the climatic conditions, or the length of time fertilizers have been applied, or the previous treatment of the soil. They are, however, the best summaries that can be presented at this time.

Mr. Chairman, there is a great deal of information regarding that matter. The Bureau of Soils compiled all the results from all the experiments that had been made with fertilizers about 10 years ago and has published a bulletin analyzing the whole question. But it is very hard to draw a general comparison because we do not know the soils that they were used on, and we know nothing except the figures. We have to accept those as they come.

Mr. FIELDS. I want to get back to the subject of the filler used in the fertilizers. Did I understand you to say early in the hearings that much of the filler used in fertilizer was contained in the product shipped from Germany?

Dr. WHITNEY. It is used in products from our own country. For example, we use acid phosphate that carries only 16 per cent of phosphoric acid. The rest of it is filler. In our ammonium sulphate we absorb our ammonia in sulphuric acid.

Mr. FIELDS. Do we get potash from Germany in concentrated form?

Dr. WHITNEY. Yes; potash comes to us in two forms—as muriate of potash and sulphate of potash, each having 50 per cent of K_2O. That is as concentrated as we can get it unless in making these concentrated fertilizers we get the potash in the form of phosphate of potash, potassium phosphate. Then it would not be a filler, but it would be a valuable constituent. Now, the sulphate and the chloride in which we get it from Germany are unnecessary, but they are the most concentrated forms we have unless we can make them in this country.

Mr. FIELDS. At any rate, if a farmer buys 2 tons of fertilizer of 16 per cent phosphoric acid, he is getting 640 pounds of fertilizer and 3,360 pounds of filler. In addition to the freight charges, he must pay for the handling of all this bulk.

Dr. WHITNEY. Yes; and also for the sacks.

Mr. FIELDS. And also the drayage, the expert men and the labor in handling it, which is a very large item in this type of fertilizer.

Dr. WHITNEY. Yes.

Mr. FIELDS. I believe you have referred to two or three methods for the application of this highly concentrated fertilizer that you have showed us here.

Dr. WHITNEY. Yes.

Mr. FIELDS. It could possibly be mixed with sand, as the phosphoric acid seems to be, and put on the soil by the farmer under instructions given, just as he must follow the instructions given in connection with the fertilizer he now buys?

Dr. WHITNEY. Yes; or it could be put on in its concentrated form. Or where large quantities are used, as on the truck soils and the citrus-fruit soils, it could be put on by sprays.

Mr. FIELDS. Judge Parker questioned you about the fertilization of the soil by stall feeding of cattle. My experience has taught me that that is a splendid way, but it does not supply enough fertilizer to meet the requirements of the farmer.

Dr. WHITNEY. No; the amount is insufficient, and besides that the difficulty and the expense of transporting such a bulky material as manure is very great. It is not practicable, except for intensive agriculture in the market gardens.

Mr. FIELDS. Take, for instance, the fertilizer from a 40-acre field of corn. If it is handled with the greatest care it would not fertilize that same number of acres. It would only fertilize a small part of that.

Dr. WHITNEY. Yes.

Mr. FIELDS. Put on by the most scientific methods, and, we will say, by the best manure spreader that could be had.

Dr. WHITNEY. Yes.

Mr. FIELDS. It probably would not fertilize one-fifth of that area. Judge Parker also referred to the fertilization of the soil by the growing of cowpeas, which is another splendid method, if you need to produce cowpeas as an agricultural product.

Dr. WHITNEY. Yes.

Mr. FIELDS. But it is a very expensive method if you are producing that for the fertilization of the soil alone.

Dr. WHITNEY. Yes.

Mr. FIELDS. In countries which are not adapted to the production of cowpeas, where it is difficult to save the seed, the farmer must buy his seed as is the case in my country largely. My experience has been that if he buys the seed, then the cowpea seed will cost more than the fertilizer, and in addition to that there is the cost of plowing the land and planting the crop.

Dr. WHITNEY. And losing the use of the land for other purposes.

Mr. FIELDS. For one year.

Dr. WHITNEY. Yes.

Mr. STOLL. The main object of plants like plant No. 2 at Muscle Shoals, I believe you stated, was to make fixed nitrogen. What do you mean by fixed nitrogen?

Dr. WHITNEY. It is really the free nitrogen of the air, which is very inert and very difficult to react, to fix that in some form in which it will be active and beneficial to the crops.

Mr. STOLL. What form must it be in to be beneficial to the crops? What do you call it when it is in the shape that will be beneficial to crops?

Dr. WHITNEY. In a general way we speak of it as ammonia, because that is the simplest form.

Mr. STOLL. That is what I thought.

Dr. WHITNEY. But it may be put into the form of cyanamid, or urea, or nitrate of soda, or ammonium sulphate, but we fix it in a way so that we designate it as a fixed nitrogen product.

Mr. STOLL. The farmer understands it as ammonia.

Dr. WHITNEY. He would value it as ammonia.

Mr. STOLL. In what form is ammonia used for fertilizer? Is it in the sulphate?

Dr. WHITNEY. It is used in the form of ammonium sulphate; but it is referred to as ammonia, even when it is present as nitric acid in sodium nitrate, or as in organic forms of nitrogen in cottonseed meal or tankage.

Mr. STOLL. What I am after is to find what you get out of the air. It would be sulphate of ammonia you would get out of the air, would it not?

Dr. WHITNEY. No; in the case of the Haber process, it would be straight ammonia gas. In the case of the cyanamid process, it would be, as Dr. Tolman told you yesterday, cyanamid from which ammonia can be made by heating it under pressure by steam.

Mr. STOLL. Dr. Tolman, who testified yesterday stated, I believe, that nitrate plant No. 2, if it makes 110,000 tons of nitrate would yield about 190,000 tons of sulphate of ammonia.

Dr. WHITNEY. No; it will make either. It will not make both. You can get your ammonia out from your cyanamid and you can convert part of it into nitric acid and dissolve the rest of the ammonia gas into nitric acid and make ammonium nitrate, or you can dissolve some of the ammonia gas into sulphuric gas and make ammonium sulphate.

Mr. STOLL. But what I am especially after now is the statistics. If we get 190,000 tons of sulphate of ammonia, that would be in form to be used as fertilizer.

Dr. WHITNEY. Yes.

Mr. STOLL. What per cent of fertilizer now used is sulphate of ammonia?

Dr. WHITNEY. That is very difficult to tell; very difficult. In 1917 and 1918 the proportion of ammonia used in fertilizers that was derived from ammonium sulphate was between 16 and 17 per cent.

Mr. STOLL. Perhaps I can get at what I want in this way, what other sources of ammonia have we?

Dr. WHITNEY. We have nitrate of soda, and about 29 per cent of all the nitrogen in our fertilizers in those years was derived from sodium nitrate. Then we come down to the animal tankage which is one of the organic forms or nitrogen or ammonia, and there was about 15 per cent derived from animal tankage. There was about 2 per cent derived from garbage tankage. There was about 2½ per cent from dried blood and about 14 to 15 per cent from cottonseed meal. There was about 2 per cent from fish scrap and the rest was from small sources, waste materials.

Mr. STOLL. Can you state how many tons that would be in the shape of fertilizer or ammonium sulphate.

Dr. WHITNEY. Yes, knowing the number of tons that were produced that year, we could, of course, arrive at that.

Mr. STOLL. I wish you would put in the record the number of tons of ammonia we now use. Have we got a sufficient supply of it?

Dr. WHITNEY. As I tried to show a while ago, we have a sufficient supply. We have an overabundant supply just now of nitrogen, in all its forms, because the farmers did not purchase last year.

Mr. STOLL. I understand that, but I mean under normal conditions have we enough.

Dr. WHITNEY. Under normal conditions, of course, we have been keeping up with the demand for fertilizers, but there has been an impossibility of getting nitrogenous material in sufficient amount for any great expansion of the use of fertilizers. I have had this matter up with the fertilizer manufacturers. If they were successful in getting a demand of 2,000,000 tons of fertilizers in the wheat and corn States, we then could not get the nitrogen to supply it.

Now, one of the reasons that the use of fertilizers has not been pushed more rapidly is that the supply, particularly of nitrogen, has been insufficient to meet any rapid increase or drastic increase in the amount of fertilizers that would be required. Just now we have a surplus of fertilizer material, but under normal conditions we would expect about 8,000,000 tons. If it had not been for the war I think the expectation would have been at this time about 9,000,000 or 10,000,000 tons. The limitations on the amount of nitrogen by the increase in the use of fertilizers, and particularly by the increase in the amount that is fed to cattle, would make it very difficult for us to manufacture normally now 10,000,000 tons of fertilizers.

Mr. STOLL. In the formula of 8–3–3, which is the one most commonly used in my State—South Carolina—how much ammonia is in that formula?

Dr. WHITNEY. There are three units of ammonia and a unit is 20 pounds, so there is 60 pounds of ammonia in a ton of fertilizer.

Mr. STOLL. If there is 60 pounds of ammonia in a ton of 8–3–3, and about 200,000 tons of ammonia can be manufactured at nitrate plant No. 2, that would furnish almost all the ammonia needed in the formula of 8–3–3, would it not?

Dr. WHITNEY. For the country or for 8,000,000 tons?

Mr. STOLL. Yes.

Dr. WHITNEY. No; I showed a while ago——

Mr. STOLL. That would make around 8,000,000 tons of fertilizer, would it not?

Dr. WHITNEY. I showed a while ago in my letter that is quoted by Senator Smith in the Congressional Record of January 7, 1921, that we were using at that time 227,833 tons of nitrogen. Now, I understand the capacity of the Muscle Shoals plant to be about 40,000 tons of nitrogen.

Mr. STOLL. No, sir; Gen. Williams said it would produce about 200,000 tons of sulphate of ammonia.

Dr. WHITNEY. Two hundred thousand tons of sulphate of ammonia.

Mr. STOLL. And I think Dr. Tolman said about 190,000 tons.

Dr. WHITNEY. And 110,000 tons of ammonium nitrate, but the production of nitrogen is about 40,000 tons.

Dr. TOLMAN. One hundred and ninety thousand tons of ammonium sulphate contains about 40,000 tons of nitrogen.

Dr. WHITNEY. And we are using 227,000 tons of nitrogen.

Mr. STOLL. I thought it would produce 190,000 tons or 200,000 tons of fertilizer material. That is where the mistake comes in.

Dr. WHITNEY. Yes; of course, you know, in figuring these things, 40,000 tons of nitrogen to be converted into ammonium nitrate has to be converted first into ammonia and then into nitric acid, so that by the time you have oxidized and added to it you get out of your 40,000 tons of nitrogen 110,000 tons of ammonium nitrate or 190,000 tons of ammonium sulphate.

Mr. STOLL. I notice from the statement that has been submitted here that my State uses about one-sixth of the fertilizer used in the entire United States, and using more than any other State I thought that if this would make all the ammonia needed it would be a very important item.

Dr. WHITNEY. No; it is only a part. It is 40,000 tons as against 227,000 tons.

Mr. PARKER. Doctor, I am somewhat puzzled by your formula of 8–3–3. You said "3" was the ammonia in the other figures, and I thought the first one represented ammonia, the second one phosphorous, and the third potash, but in the 8–3–3 you made the ammonia "3."

Dr. WHITNEY. Let me tell you about that. That is a difference in practice between the North and the South. In the Northern States the ammonia is always given first, and that would be 3–8–3. In the Southern States the phosphoric acid is invariably given first, and the same formula would be written 8–3–3.

Mr. PARKER. That is to say, in each case it means 8 of phosphoric acid.

Dr. WHITNEY. Eight of phosphoric acid.

Mr. PARKER. Three of potash.

Dr. WHITNEY. Three of potash.

Mr. PARKER. And 3 of ammonia.

Dr. WHITNEY. Yes, sir.

Mr. PARKER. That makes it plain. I now want to ask you one other question. Something has been said about cowpeas; all beans and peas take ammonia from the air, do they not?

Dr. WHITNEY. Yes; all leguminous plants.

Mr. PARKER. And some of them will ripen in any climate, for instance.

Dr. WHITNEY. Yes.

Mr. PARKER. If you take any soil on a farm, all the nitrogen that is in it has been brought there from the air by plants, if it has not been fertilized?

Dr. WHITNEY. Well, we are uncertain about that. We would not say that. We do not know.

Mr. PARKER. On the ordinary farm there are no nitrates?

Dr. WHITNEY. Oh, yes.

Mr. PARKER. As to the potash; that comes out of almost every pebble, especially if they come from granite rock.

Dr. WHITNEY. Yes, sir.

Mr. PARKER. And as those pebbles break into smaller pieces more potash is formed.

Dr. WHITNEY. Yes, sir.

Mr. PARKER. As to the phosphorus, that is about the same, too. It does not come from the air, but certain parts of the mineral on every farm contain some phosphorus, or ought to.

Dr. WHITNEY. Yes.

Mr. PARKER. But very little.

Dr. WHITNEY. It is a small amount; yes.

Mr. PARKER. And there is quite a quantity of potash, if it can only be put in usable form on almost every farm?

Dr. WHITNEY. Yes, sir.

Mr. CROWTHER. I have just one question, Doctor. You exhibited this morning two specimens of fertilizer with different formulas and you read the formulas. Did either of them contain nitrogen in the sulphate form or ammonium sulphate?

Dr. WHITNEY. No, sir.

Mr. CROWTHER. They were not present in either of those formulas that you exhibited this morning?

Dr. WHITNEY. No, sir.

The CHAIRMAN. Doctor, we are very much obliged to you and thank you exceedingly for your patience and kindness.

Dr. WHITNEY. I have been very glad to be with you.

(The committee thereupon adjourned until Thursday, February 16, 1922, at 10.30 o'clock.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Thursday, February 16, 1921.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. Gentlemen, Mr. Worthington, who was not feeling very well yesterday, and who is not feeling particularly strong this morning, is here to make his statement and to answer such questions as the committee may desire to ask.

STATEMENT OF MR. J. W. WORTHINGTON, CHAIRMAN OF THE EXECUTIVE COMMITTEE OF THE TENNESSEE RIVER IMPROVEMENT ASSOCIATION.

The CHAIRMAN. Mr. Worthington, will you kindly proceed in your own way and tell us what you have to say in reference to the offer of Mr. Ford regarding the Muscle Shoals property?

Mr. WORTHINGTON. Well, Mr. Chairman, I hardly know what to say to you unless I knew what you desired to be told to you.

The CHAIRMAN. Have you been following the hearings?

Mr. WORTHINGTON. I have read the hearings.

The CHAIRMAN. Is there anything you desire to add to what Mr. Mayo told us the other day?

Mr. WORTHINGTON. Well, perhaps, not on the line of his statement and not so much as speaking for Mr. Ford, I think I would like to make a statement somewhat on my own account, and I make that explanation because I think that Mr. Ford would be displeased with me if I was to say anything that was in the nature of an appeal to this committee that they accept his offer. He has expressed himself to me as very much opposed to anything of that sort.

However, there are some phases of the case I would like to get in the record.

The CHAIRMAN. Would you kindly state those phases?

Mr. WORTHINGTON. There is a phase of this case that seems to me, according to my view, very much misunderstood. Take the case of the Warrior River steam plant, and I am sure that any one who looked into the question would understand why Mr. Ford included it in his offer. The steam plant at nitrate plant No. 2 when running at capacity will require, perhaps, 1,500 tons of coal daily.

The CHAIRMAN. 1,500 tons daily?

Mr. WORTHINGTON. Daily; and nobody who knows Henry Ford would ever think he would pay a railroad $1,500 or more a day to haul that coal up there if he used that plant, and so it was most natural for him to have included the steam plant in his proposition. Not only so, but at nitrate plant No. 1 you have a steam-power development of 5,000 kilowatts; but, of course, if this offer of Mr. Ford is accepted, you can see at once that he would move that down to the coal instead of hauling coal up to it. So his offer for the Warrior River steam plant was in keeping with his intention and purpose all through his proposal; that is, economy.

I wanted to clear that up. There was an economical, sound reason for the proposal. In addition to that, while this committee, of course, will make its own decision, that power down there is needed to supplement the secondary power at the dam of the United States, and that is so plain from the record as not to require any discussion whatever.

There are some other phases of this case which I think are not understood. As I read the report of the Secretary of War and his statement and some of the other statements made before this committee, I am quite certain they do not understand Mr. Ford, and I will confess to this committee that it took me a good

long time to get such little understanding as I have of him. And I mean by that statement that in my earlier negotiations with him I supposed he was like other business men I had met, that they wanted to make money, but he called me on that proposition more than once and said that that was not his purpose at all, and I have become firmly convinced that that is true. So you will see, Mr. Chairman, that he was a little different in that respect from most men, if that is true.

Perhaps you know that as it turned out. I carried this Muscle Shoals case to him at the request of the Chief of Engineers. I noted in reading the Secretary of War's testimony—and please do not understand that this is a criticism; far from it—that Mr. Ford seemed to be groping around in the dark about his enterprises. I think that is about the most inaccurate statement that could be made about Henry Ford, and I would like to relate to the committee a little incident that happened. Instead of his being a groper around in the dark, he is the most definite and direct-acting rapid-firing human motor that I ever met. I will give you an illustration. On June 6 this Muscle Shoals matter was presented to him and in the afternoon he looked over some of the maps with his chief engineer, Mr. Mayo, and after two hours' consideration, he jumped up and said, "Let us go to Muscle Shoals," and Mr. Mayo asked him when, and he said "At 8 o'clock this evening." I just offer that as a suggestion that he is not much of a groper. He is the most direct, rapid-firing institution that I ever ran against.

But I do not think it is a thing to be wondered at at all that the Secretary of War said that, because in my little way, in the last 10 years here in Washington, I have found it the most difficult thing in the world to get with you gentlemen any engineering contact, and if you will take the history of your power legislation, you seem to have listened to everybody except the engineers who knew about it. So it is not a surprising thing that the Secretary of War would make that comment, and it is not new to me, Mr. Chairman, that statesmen do not understand the man of genius in certain lines, because you gentlemen remember, no doubt, that Mr. Gladstone was aked to go to meet, right at the peak of his career, some of England's scientists. He was carried to Mr. Darwin, and it is said that Mr. Darwin understood just about as little of what Mr. Gladstone said to him as Mr. Gladstone understood about what Mr. Darwin said, and then they carried Mr. Gladstone to meet Faraday, and Faraday showed him the motor. Mr. Gladstone asked him. "Why, what is the use of it?" It stumped Faraday, but he arose to the occasion and said, "Tax it," and that is the way with this whole proposition of waterpower here in Washington. Everybody wants to tax it, which is not in the interest of the consumer.

On that side of taxation and the creation of taxable wealth, there is one phase of the case at Muscle Shoals that, as far as I have seen, you have not considered. You take the internal-revenue receipts for the fiscal year 1920 and you will find a very interesting thing. The State of North Carolina, after the Civil War, was the poorest State, perhaps, among all southern States. They had no coal, no iron, and were strictly an agricultural State. Their cotton interest and production were ruined by the Civil War, but, Mr. Chairman, did you know that North Carolina, in the year 1920, paid more Federal taxes than any State in the South, not excepting Texas; more taxes than any New England State, with the exception of Massachusetts; more taxes than Indiana, with Gary in it, and more taxes than Missouri and more taxes than West Virginia.

There is an explanation for that, and when that explanation is sought and truly found you will find that it is the development of water power in North Carolina, and, Mr. Chairman, I need not consume the time of the committee by making a similar and greater example of your own State of California.

So, suppose all of these claims about these hardships that the United States Treasury is going to suffer down there are true, is it a good investment? It is a business proposition that you can determine the facts about. If you want to lift the burden of taxation in this country, if you want to lift taxation, develop these water powers and put them to work creating the wealth to pay the taxes, and if you will investigate the subject right seriously and thoroughly (and, of course, you may say that I ought not to say that because you have done it; but I think you might look into it again), you will find some very remarkable things on the subject that have not yet been disclosed, so far as I know.

Suppose we take another viewpoint. You take the water power that is possible of development in the Pacific Coast States. You have a group of

States out there that have perhaps 40 per cent of all the power that could be developed in this country. Bear in mind, now, that it is only in the last few days, and I am not criticizing them at all, but it is only in the last two or three days that we see that the coal-mine labor and the rail labor are going to get together, and I do not expect that any member of this committee hopes to see very much reduction in the rates paid coal-mine labor and rail labor.

Mr. Chairman and gentlemen of the committee, there is a direct relation between the amount of power used per wage earner and the value of the product which it produces. In 1899 we were using 2.1 horsepower per wage earner, with a resulting value of products of $2,400. By 1914 we had increased the amount of machine power, supplementing our man power, to 3.2 horsepower per wage earner, and the value of the products had correspondingly increased to $3,400.

You can see, I think, from that, if you do not deny the statement as a fact, that if we are to progress and if we are to share the world's market we have got to place ourselves in the position of being able to compete with European labor by increasing the amount of power that we give each wage earner to supplement his own efforts, and we must not stop at any figure of 3 horsepower or 4 horsepower, but must carry it high enough to wipe out the difference in the labor wage paid here and abroad, and you can wipe it out with water power if you will develop it. But we satisfy ourselves in the United States, you know very well yourselves—I suppose we can talk among ourselves as American citizens—we satisfy ourselves about a great many things by just simply boasting about it, and we boasted that we have got more water power than any nation (and it need not be said to this committee, Mr. Chairman, that there has been a good deal said about water power in Congress of about 10 years), but what have we developed?

We, in this country, have not built a dam in 10 years in a single navigable stream, but Canada, in 1920, had 850,000 horsepower under construction.

The CHAIRMAN. What country is that?

Mr. WORTHINGTON. Canada.

The CHAIRMAN. Our neighbor on the north.

Mr. WORTHINGTON. Right across the line, and I can say to this committee that they are laughing up their sleeves at us, and I do not blame them. We deserve to be laughed at about it, because this water-power proposition would be the biggest joke that ever was in this country, except that it is so serious.

Now, you take Canada, the Chippewa development is just about to be finished, of 500,000 horsepower and an installation is being made of 150,000 horsepower, and a few days ago you perhaps noticed that 50,000 horsepower was put in service.

Now, the Secretary of War suggests to you, and I understand a great many people insist upon it, that Mr. Ford ought not to have proposed on Muscle Shoals unless he had been willing to come under your power act. Well, we will not consume the time at present, but if you wish it, I will hand this committee a parallel of what Mr. Ford proposes to do and what the water power act requires, and you will see that only perhaps in the period of 100 years does he, in any essential way, depart from your power act.

It is a matter of choice, I suppose, but Mr. Ford is one of those men who is very definitely opposed to a great many details, and he holds exhaustive bookkeeping and accounting not in very high esteem, and if anybody comes here under your power act, and complies with it, he must open a bookkeeping establishment here in Washington. There is no doubt about it.

Now, in regard to the 100 years, I am sure there has been a great misunderstanding of that matter. I would like, Mr. Chairman, to ask you and the gentlemen of this committee what has happened at Keokuk, which is indefinite, I believe, as to the period, what has happened there to teach that it ought to have been 50 years. What has happened at Hale's Bar to make you conclude that, and what has happened at Lock 12 on the Coosa River; and if nothing has happened and there is no experience there that enforces you to contend for 50 years, just why should you do it? And, after all, Mr. Chairman, what has the period to do with it? The question of rates is the telling thing, the deciding proposition. Every member of the committee will have to accept that view.

Now, in the case of Muscle Shoals, it does not make any difference who gets it, if any power is sold to the public, the rates are fixed by the authorities of the State of Alabama charged with the duty to do it; and I would just like

to ask you gentlemen, if you were renting a great big skyscraper and you were permitted to make the rates, just why would you want to reduce the time; and I suggest to you that I would not want to own anybody's skyscraper if I could make the rates, and that is just the way this proposition is about the making of rates for power.

The period has nothing to do with it, as I am sure a moment's reflection will cause this committee to decide, and if the United States or Congress ever decides that it must take over a water power, do you suppose they would wait 50 years if they found it necessary to do it? Why, of course not.

Now, how did the 50-year limitation ever get in there? It was a compromise and every one of you gentlemen who was a Member of Congress during that discussion knows it. It has nothing sacred about it. Why was it not 40 years or why was it not 60 years?

Now, finally, at Muscle Shoals, it is too big for 50 years. It takes too much capital to ever work it out in 50 years, and not only that, the secondary power at Muscle Shoals is such a large percentage of the power that it will take years and years to make it primary, and the most important single statement that Mr. Ford has made to me in the last two months, and on his own motion and without any coaching on my part, was when he said, "Well, if we get Muscle Shoals we will go up the Tennessee and build the dams on the main stream and tributaries and develop that power and improve the navigation, and we will not ask the United States for a single cent."

This Tennessee River program, gentlemen, is out of the usual class and clear out of any 50-year period. Now, you may find that there are those who will offer to take it on 50 years, but they have no such program as Henry Ford; not at all; and before I leave this 100-years question, I would like to cite this committee to what Germany is doing, and I am going to ask the indulgence of the committee to let Mr. W. G. Waldo, the consulting engineer of the Tennessee River Improvecent Association, read for me, because I am not just fit to-day, if you have no objection to that.

The CHAIRMAN. There is no objection and we will be very glad to have the engineer read it.

Mr. WALDO. In the issue of July 26, 1921, of the magazine called "Power," there is an article entitled "Germany Developing Water Power," describing the project on the Neckar River which is a link of the Danube. The proposal is to build from 25 to 28 dams, and the ultimate development is only 70,000 horsepower. The quotation is as follows:

"While the ultimate object of the whole enterprise is the canalization of the Neckar and the linking of that river with the Danube, its immediate purpose should be seen in the harnessing of the Neckar and the generating of hydro-electric energy with a calculated output of 70,000 horsepower, equal to 300,000,000 to 400,000,000 kilowatt-hours. The whole scheme represents a bold attempt to render large industrial districts in the south of Germany less dependent on outside coal supplies and its success from a revenue-paying point of view will, in a measure, be linked with the future development of the south German coal market, and, above all, with inland coal prices and coal taxes.

"The entire project, covering the section of the Neckar from Mannheim to Plochingen—a distance of about 210 kilometers (130 miles)—provides for 25 to 28 dams. It is intended to start building operations at the five best-suited barrages without further loss of time and the first 700,000,000 marks' worth of obligations will shortly be issued. Completion of the scheme in its present form will take from 10 to 13 years. Concessions have been granted for a period of 100 years."

Mr. WORTHINGTON. There you find in Germany a case where there is only 70,000 horsepower against your 750,000 here, and how many dams are there?

Mr. WALDO. From 25 to 28.

Mr. WORTHINGTON. There are 25 to 28 dams for 100 years, and you have two dams of 750,000 horsepower and you want to cut the time down to 50 years.

I would be very glad if any member of the committee would like to ask any questions on this 100-years business that I could answer, because I do not think there is but one side to it and I am very honest in that.

The CHAIRMAN. Would you like to complete your statement and then have the committee ask you questions?

Mr. WORTHINGTON. I would be very glad to. There is a phase of this case at Muscle Shoals to which I would like to especially call the attention of the committee. The biggest man that has ever come to my State of Alabama was

Mr. M. H. Smith, president of the Louisville & Nashville Railroad; he was our J. J. Hill. He was the only big man at the head of any big corporation that I ever met, in the earlier discussions of this Muscle Shoals case, who was willing to get behind it. He is now dead, but has a very worthy successor in Mr. W. L. Mapother. In an address before the Chamber of Commerce at Birmingham a few days ago Mr. Mapother particularly dwelt upon the Muscle-Shoals-Ford case, and announced his indorsement of it, and he made this significant statement, Mr. Chairman. He said that if Mr. Ford developed this power and would let the L. & N. have it, he would electrify one of the divisions of the Louisville & Nashville Railroad; the one running into Muscle Shoals.

I would like, in making these comments on electrification, for the gentlemen from Washington, Oregon, and California to take particular notice.

The Chicago, Milwaukee & St. Paul Railway is operating a total of 646 miles electrically, and these figures are taken from a signed statement of the president of the road. They estimate that their electric operations save annually about 260,000 tons of coal and about 32,000,000 gallons of oil. The saving in avoiding the use of this fuel is not only the value of the fuel itself, but eliminates the hauling of nonrevenue-company fuel amounting to nearly one-quarter of the total revenue freight business. The 44 electric locomotives have replaced 120 steam locomotives, and it would have required 210 cars moving continuously to handle the coal for those steam locomotives on one division alone. If this power is generated even by steam in a central station, 100 pounds of coal will do the work of 290 pounds burned under the boiler of a locomotive, and if this power was supplied from water power on all the railroads of the United States the saving would total the enormous sum of 122,500,000 tons of coal, which is about 25 per cent of the total maximum output of the bituminous mines of the United States.

Electrification of railways doubles the capacity of their track and postpones by a long term of years the time when double tracking will be necessary.

Now, I insist that if nothing came out of this proposition at Muscle Shoals, if you accept Mr. Ford's offer, except the electrification of the railroads, it would be an example and a lesson that would be beyond anything that we can calculate to the interests of the United States, and I would like to speak particularly to the gentlemen who are from the Pacific Coast States, where you have nearly 40 per cent of the power. What effect will it have on you if the rail labor of the country and the coal labor ever get together and there is a strike, if your roads are electrified? You will not have to worry. Now, there is no doubting of that. That is not a matter of opinion.

Somebody may raise the question, "Well, will Mr. Ford let the L. & N. have the power?" Nobody who knows Henry Ford will doubt it a minute.

Now, it has been said that Mr. Ford does not pay enough interest; that he ought to pay more than 4 per cent. Now, that is right where Henry Ford is misunderstood, and I may say to you that he says that the money changers, some of them, have got to get out of the water-power temple, and this is what he means:

If you take a hydroelectric development with an investment of $200 per horsepower and your money costs 2 per cent, you have got an interest charge of $4 per horsepower per year. If the money costs you 3 per cent, you have $6; if it costs you 4 per cent, it is $8; if it costs you 6 per cent it is $12; if it costs 7 per cent, it is $14; and if it costs 8 per cent, it is $16; and if it costs 9 per cent it is $18; and if 10 per cent it is $20.

Now, that is a charge that the consumer has to pay. His idea is that some way or somehow there ought to be a plan devised, a policy set up in this country to develop these powers without these shocking interest charges.

You may say that it makes no difference, but it does make a difference. It is the difference between cheap power and expensive power, because in the case of water power 75 or 80 per cent of the annual cost of the power is the cost of the money invested.

You can assume that a given development has an annual operating expense of, say, $3 per horsepower; the overhead (or interest and retirement fund cost) is 68 per cent of the total annual cost per horsepower, with a 2 per cent rate for money; it is 75 per cent with a 3 per cent rate; it is 80 per cent with a 4 per cent rate; it is 83 per cent on a 5 per cent rate; and 85 per cent on a 6 per cent rate; 87 per cent on a 7 per cent rate; 88 per cent on an 8 per cent rate; 89 per cent on a 9 per cent rate, and 90 per cent on a 10 per cent rate.

Now, what does money cost for this power? Suppose Mr. Ford had said—and Henry Ford is able to pay it—"I will pay you 6 per cent." Who would foot the bill? The customer.

I think, or I hope, that that answers that side of it, because his unalterable intention and objective is to reduce the cost of power to the consumer and to the user. Nobody need doubt that.

In a recent publication of the Electrical World you will find a statement that shows the rate of interest on power securities, mortgage bonds, debentures, preferred stock, cumulative, and preferred stock, noncumulative, and, Mr. Chairman, without consuming the time of the committee, I suggest if you are interested in this subject of reducing the cost of transportation by rail by serving railroads with water power to operate them, that these figures will interest you.

The CHAIRMAN. May I suggest that you put that statement in the hearing?

Mr. WORTHINGTON. All right; we will be very glad to.

(The statement referred to follows:)

Electric light and power security issues in 1921.[1]

Mortgage Bonds (average yield 7.35 per cent):	
6 issues at 5 per cent	$5,060,000
27 issues at 6 per cent	104,154,000
2 issues at 6½ per cent	30,572,000
27 issues at 7 per cent	98,314,000
17 issues at 7½ per cent	50,937,000
12 issues at 8 per cent	17,156,000
91 issues	306,193,000
Debentures (average yield 7.99 per cent):	
2 issues at 7 per cent	8,600,000
2 issues at 7½ per cent	12,000,000
1 issue at 9 per cent	436,000
5 issues	21,036,000
Notes (average yield 7.44 per cent):	
1 issue at 5 per cent	1,750,000
1 issue at 6 per cent	600,000
1 Issue at 6½ per cent	2,000,000
8 issues at 7 per cent	41,700,000
2 issues at 7½ per cent	1,869,000
10 issues at 8 per cent	15,700,000
23 issues	63,619,000
Preferred stock (cumulative)—(average yield 7.94 per cent):	
9 issues at 8 per cent	25,313,000
3 issues at 6 per cent	7,080,275
1 issue at 7 per cent	1,000,000
13 issues	33,393,275
Preferred stock (non-cumulative)—(average yield 7.76 per cent):	
2 issues at 8 per cent	9,000,000
1 issue at 7 per cent	88,200
1 issue at 6 per cent	1,200,000
1 issue	547,863
5 issues	10,836,063
Common stock, 10 issues	21,837,605
Total of all issues of year	456,914,943

[1] Electrical World, Jan. 21, 1922, p. 133.

Mr. WORTHINGTON. Let us go back to the Pacific coast again which, by the way, is the most interesting section of the United States as far as water power is concerned. It is said that you have in that group of States out there 40,000,000 horsepower. Just suppose it cost $100 of horsepower to develop that power, the annual reduction in cost of that total power development, if you got your money at 5 per cent instead of 8, would save you $120,000,000 a year. If you got money at 4 per cent instead of 9 per cent, it would save you $200,000,000 a year. Therefore the saving per million of horsepower developed at 5 per cent instead of 8 per cent is $3,000,000 annually, and the saving per million of horsepower developed at 4 per cent instead of 9 per cent is $5,000,000; mind you, per million of horsepower developed.

Now, I mean no disrespect to anybody at all, but I say to this committee, in the light of some years of study of the case and being around Washington and watching water-power legislation, that you have no water-power policy. No member of the committee takes up the gantlet on that proposition. The results of your power legislation answer and sustain what I have stated. I believe this water-power law was passed in 1920, I am not sure; am I right about that?

The CHAIRMAN. I think it was.

Mr. WORTHINGTON. Well, what has been done? Now, what have you done? The very latest interesting thing about the whole case is that the representatives of the power companies were before the power commission on November 21, and one of the leading authorities on the subject of power, Mr. M. R. Bump, the president of the National Electric Light Association, outlining the reasons for asking a hearing before the commission, in part, said:

"We understand that applications for permits have been filed before your commission for over 16,000,000 horsepower. This shows the public interest which indicates the national importance of the act. We wish to point out, however, that the mere filing of these applications does not at all signify development."

And right there I would like to ask this committee to contrast what is going on in Canada with your filings here.

"It is exactly similar in nature to the filing of myriads of mining or oil claims. The filings, which cost practically nothing, are in some cases duplications; they do not indicate any ability on the part of those who file to carry out the development, and in many cases they merely represent the dreams and the hopes of speculators. Many of these filings, however, we know have been made by men or companies of means solely with the hope that they will be able to develop independent water-power properties as soon as the present rules and regulations are made workable, as they feel confident must be done. The acid test as to the present rules and regulations is not at all the spectacular and very misleading applications for permits, but the amount of actual, bona fide construction now in actual progress. An investigation will show that there has been practically no financing of independent water-power projects of consequence under the present rules and regulations, but that, on the contrary, substantially all the material development where the United States Government is involved is by and on the credit of the large property holdings of the older companies not on Government land and based on the credit of their well-etsablished business, antedating even the passage of the act itself."

Now, is it a reasonable thing for Mr. Ford to want to stay from under an unworkable law? That is the case on that side of it, and I want to say to the committee that I know if it can be shown to Mr. Ford that he is avoiding anything that will contribute to the cheapening of power and to the service of power in an economical way, that he will subscribe to whatever that is; but this thing of attacking him about it and not offering a good reason for it is all aside from the question, because this is a big business matter you are dealing with.

There has been a great deal said, I fear rather thoughtlessly, about the production of fertilizer at Muscle Shoals. I am not going to engage the attention of the committee on that subject at length. I will suggest, however, that we ought not to boast so much in this country if we can not do what Germany is doing. Germany has freed herself from her dependence on Chile for nitrogen, and I believe if Henry Ford goes to Muscle Shoals he will free the United States from dependence upon Chile; at least, he will do as well as Germany. I will not agree that he will fail in that.

Now, you have directed your attention, I think, too much perhaps to the subject of nitrates, and I see in the paper that a gentleman is going to appear before this committee, and you will learn from him that the country is so fortunate in that there is something else at Muscle Shoals except nitrates for the farmer, and that gentleman is Mr. Swann, who deserves more credit, according to my view, than any man in the United States to-day for what he has done at Anniston, Ala.

This subject can be discussed, as has been demonstrated for the last 15 years, at length.

Mr. Chairman, it was stated by Mr. Mayo that Mr. Ford would use all the power himself in connection with his proposed industrial operations at Muscle Shoals, and the committee might raise the question with me about bringing up this electrification of a portion of the Louisville & Nashville Railroad. There would not be any trouble about what Mr. Ford would do, because cheap transportation assures cheap rates on what he manufactures there, and he would be as much interested in getting those rates cheap as any other job that he undertakes to do. That is a plain case of ordinary business economy.

I want to go back, if the committee will indulge me, to this 100 years' business. I am not critical, but I want to show this committee how utterly absurd the whole thing is.

Here is a map of the Little Tennessee River, and it is one of the most wonderful power rivers in all the Southeast. It is very little known, and yet the Aluminum Co. of America—and that company knows a good water power—has practically controlled the power development on that stream. The Little Tennessee flows into the Tennessee down here at Lenoir City. As a matter of fact this development of the Aluminum Co. of America is in North Carolina, just over the Tennessee line. Their plan is seven dams, and No. 2 dam is already completed, with a capacity of 75,000 horsepower, and the power is being used at Alcoa, where the Aluminum Co. of America has an aluminum plant.

Now, gentlemen, the period that the American Aluminum Co. of America controls this river is perpetual. Just what is the common sense in saying that when the water of the Little Tennessee River serves the Aluminum Co. of America at Alcoa in the production of aluminum, it is without limit and when the same water gets into the Tennessee River and runs down the Tennessee and gets to Hales Bar, 27 miles below Chattanooga it there becomes 99-year water; and then when it gets to Muscle Shoals it is 50-year water? If there had been any other falls lower down toward the Ohio, I suppose it would have gone to the vanishing point. I submit to you in all common sense that that absolutely blows up that whole contention. Do not understand that I suggest that you interfere with the Aluminum Co. of America in their location. I do not suggest it to you at all, but I do suggest most respectfully to you, not as a threat either, that if it is attempted the Tennessee River Improvement Association will come here to Washington and fight it. There is no reason why that company should not go on making aluminum for 50 years, or for 100 years, or for 150 years. Of course, as to the rates, that is another matter which I do not need to discuss. But you will not control the price of aluminum by limiting the period of water service. You had just as well say that in regulating railroad rates the Interstate Commerce Commission will be controlled by the duration of a railroad's charter. It is all absurd. It just blows up itself, and there never was anything in it.

It ought to be changed. I do not suppose it ever will be.

You can see that map over there on the wall. Let us see if we can make this 100-year proposition, or 50-year proposition a little more ridiculous. These are the transmission lines of the southeastern power development. There are 750,000 horsepower developed in the Carolinas, Georgia, Alabama, and Tennessee. Those powers happen to be developed on streams that are said to be nonnavigable. But whenever the water gets into a stream where on the map the United States engineers have taken their brushes and colored it, it immediately becomes 50-year water. That is a fact; you know it is, Mr. Chairman, yourself.

I have not the strength to-day-and I have not the ability either, but I do know a man who is strong, and he has the ability, whom I suggest you have before you before concluding these hearings. You ask him to describe to you his studies conducted under the War Industries Board with regard to power during the war in connection with this whole southeastern situation, and you will find that he will make statements that are most interesting to this committee with respect

to the coordination of these power developments. Now, I would like to know how you could coordinate 50 years with 100 years. You must take some basis. Then what would you do with this perpetual case, if you try to coordinate and tie in with that? The gentleman I referred to is Mr. Frederick Darlington.

The CHAIRMAN. Where can he be found?

Mr. WORTHINGTON. He can be found at the Westinghouse Co. in New York. In that connection, Mr. Chairman, you will remember his report, or the report made by his staff, which was printed and submitted by the United States engineers, I think signed by Col. Keller. If you are interested in the war preparedness side of this case, Col. Keller knows this waterpower question as related to that matter.

Our association is too poor to make exhaustive surveys, but you will remember you appropriated $125,000 to make this supersurvey from here to Boston, and you will find some most interesting statements on the subject of electrification.

But as poor as we are, we made a little study. It is no more than a suggestion, but it shows how the super-power program might be worked out for Muscle Shoals, around to Birmingham, Atlanta, through the Tallulah Falls, and around through Roanoke, Charleston, Huntington, Cincinnati, Louisville, and Nashville. Of course, that does not mean the Tennessee River alone, because the Cumberland River has valuable powers, if you ever decide to survey them and find out what they are. The powers on the upper Tennessee have never been surveyed, and it is not known what they are. But they are controlled by the United States. That is just a little study we made.

If we had had $125,000 we would have carried it out much further, but we did not have the money.

Now, Mr. Chairman, in respect to the fertilizer side of it, just a practical example: I suppose the members of the committee know that the cottonseed production in 1914 is reported at 1,901,467 tons. Of that tonnage, 881,000 tons went into fertilizer—food into the ground. Cottonseed meal has only 6 or 7 per cent of nitrogen. It is a crime to do that, because this nitrogen compound that the farmer uses is only 6 per cent nitrogen, which is about 30 cents a pound, with cotton seed at only $40 a ton. We ought to get the nitrogen out of the atmosphere, ought we not, and stop boasting, so that the cottonseed meal can go to California, Illinois, and Washington to feed cattle. and so that it can go to Vermont and to Massachusetts. And then if there is any surplus it ought to go to Norway, Sweden, Holland, and other European countries. But now, what does the southern farmer use it for? He has not got anything else; nobody has ever taught him how to use anything else or where to get anything else. How in the world can that poor negro tenant in the South work that problem out?

You may think that on this proposition I am talking through my hat, but if Henry Ford goes to Muscle Shoals he will work it out.

I suppose you gentlemen know that it is stated by those who are best informed that we in this country passed the peak of food production per capita in 1898, and that importations are expected in 20 years, the way we are proceeding. What is the remedy? Make the soil more fertile, restore it, and increase production.

I do not think I should consume the time of the committee any further. I suppose the committee is informed about the increase in electric-furnace operations in this country. It is an industry by itself, new, and described very uniquely by a writer on the subject as silent and a secret.

Mr. Ford stated to me in these discussions that we will not have any secrets at Muscle Shoals. You will not find an industrialist in this country who will make that statement except Henry Ford.

The CHAIRMAN. Mr. Worthington, I believe you stated you carried to Mr. Ford the proposition that was drawn up by the law officers of the War Department of this Government?

Mr. WORTHINGTON. Mr. Chairman, I suggested at the time the Chief of Engineers sent out invitations to power companies and a great number of other companies that might be interested. that he send Mr. Ford an invitation just the same as the others, and the Chief of Engineers was a little surprised at it. But I told him certain things Mr. Ford was doing, some in connection with

power development. He sent the invitation, and within 48 hours, perhaps, the Chief of Engineers got a telephone message from Mr. Ford's office asking him to come up there. But he could not go, and he asked me if I would go and gave me a letter, or a copy of the letter he wrote to Mr. Ford, saying that he asked me to come. I got another letter of introduction from Senator Underwood, and with those I went there on June 6. Mr. Ford went to Muscle Shoals on June 14, and he asked me to go to Detroit with him. He and Mr. Mayo went, and he said he was interested. He said he had nothing to conceal about it. He said he wished I would spend some days with Mr. Mayo assisting Mr. Mayo with such information as we had collected through all these years.

I did that, and it required only until July 8, when he signed the offer, and this thing about his groping around sort of sticks in my craw. I called the Government's attention to the fact that he got this offer down here between June 6 and July 8, and the Government has been at Muscle Shoals working with it nearly 100 years. I do not refer to that same 100 years, either. That is how quickly he acted; and the offer has been coming to you for six or seven months. That is the history of it. I want to make it very clear to the committee that I am not a paid employee of Mr. Ford. I do not know that that information would be of any interest to the committee, but I want it understood.

He stated on the first day I was with him, on June 6, that he wanted to know what my relations to it were, and I explained them briefly. The next morning, June 7, Mr. Mayo said Mr. Ford was not satisfied with that statement. It became clear that they wanted to know what I was going to charge them, and I made it very clear that I did not have anything to sell; that this property belonged to the United States; and that I had not brought myself into the present situation or status, but civic organizations, farmers' organizations, etc., had done it, and I had no right to sell their influence. He could not buy it if he were to try. So I have merely furnished him such information as we had.

If the committee would like to see at any time what we have down there, or if any member of the committee is interested in that, we would be delighted to have you come down to our headquarters on Pennsylvania Avenue, and we will show you a motion picture of this plant from the time they broke the dirt until it turned out ammonium nitrate, and you can learn more there in 40 minutes than you can learn by reading books, because it is plain to the eye, and you can see the whole proposition. That is an answer in reference to my relations with Mr. Ford, is it?

The CHAIRMAN. Yes.

Mr. WORTHINGTON. That is what you wished?

The CHAIRMAN. Yes. What company are you connected with at the present time?

Mr. WORTHINGTON. None at all.

The CHAIRMAN. What company have you been engaged with?

Mr. WORTHINGTON. In the past I have been connected with the Sheffield Co., and I was president of the Muscle Shoals Hydroelectric Co. I was at one time vice president of the Alabama Power Co.

The CHAIRMAN. You were vice president of the Alabama Power Co.?

Mr. WORTHINGTON. Yes, sir; beginning in 1913.

The CHAIRMAN. That is the company that is mentioned in connection with the contract for the development of the nitrate plant No. 2?

Mr. WORTHINGTON. That is the same.

The CHAIRMAN. When did you cease your connection with that company?

Mr. WORTHINGTON. I think it was in October, 1915; I think it was in 1915—yes; it was in October, 1915.

The CHAIRMAN. That was before the United States got into the war?

Mr. WORTHINGTON. Oh, yes.

The CHAIRMAN. We were still at peace?

Mr. WORTHINGTON. Yes.

The CHAIRMAN. How did you come to break your connection with the company, or do you desire to go into that?

Mr. WORTHINGTON. That is a little bit embarrassing. I got fired.

The CHAIRMAN. Do you want to state the circumstances, or would you prefer not to do so?

Mr. WORTHINGTON. Oh, I do not know, Mr. Chairman. But if you ask it I will answer. It is not any pleasure to me to answer it.

The CHAIRMAN. I am sure the committee would like to know.

Mr. WORTHINGTON. At a meeting of the directors in New York—I was a director of the company—Mr. Mitchell, whose memory I cherish very much and who was one of three men in my State who are entitled to be regarded as of the first industrial magnitude—he is dead now—stated that he thought my activities about Muscle Shoals at Washington were not in harmony with the interests of the Alabama Power Co. I thought we had been some time approaching that statement, and I told him I thought he was right about it and that I ought to resign, and I left the company on account of my insistence that I could not be diverted from this Muscle Shoals proposition. The only reason in the world why I felt that way was this: All this Muscle Shoals talk can be narrowed down to one thing—capital. While perhaps it may now be true that the Alabama Power Co. or other companies would come forward and take it where you brought it, there are a good many reasons why people have been speeded up in the last few months. Before and since 1915 I have continued my interest. I started very foolishly to give my time and attention to it in 1901, and if you find anybody around here who wants to tackle anything of that kind, let them talk to me a little bit, and I will save them some trouble.

The work we have done has been done through the Tennessee River Improvement Association. It has been expensive work, but we never bought anything except facts; and Mr. Graham, when he was investigating the Muscle Shoals case, gave us a clear sheet. We have no apologies to make to anybody about what we have done.

The CHAIRMAN. While you were connected with the Alabama Power Co. this matter occurred of doing something for the Government and mixing it up so with the Government's affairs that, as one of the witnesses said the other day, "the eggs could not be unscrambled."

Mr. WORTHINGTON. You are talking about the Warrior River plant?

The CHAIRMAN. Yes.

Mr. WORTHINGTON. Whoever said that was rather mistaken about the situation. The Government did not build any egg plant down there. That is a steam electric station, and they do not lay eggs; they produce kilowatts; and you can unscramble kilowatts all right, if you try. There is a big station down here somewhere in Ohio—I can get the name of it if you want it—where there are two big companies, with the installation of one in one end of the station and the installation of the other in the other end of the station, and there is a property line running right through it. Such things as that, Mr. Chairman, remind me of a little story. A friend of mine in Alabama at one time told me he was taking a long walk one Sunday out in the country, and he came by a little Negro hut, with a little lot, and he looked over there, and there was a poor old horse, and the Negro was drenching him, pouring some mixture down the throat of the horse, which was sick. This gentleman walked along, and the Negro said to him, "Boss, is you a horse doctor?" My friend said, "No; I never doctored any horse." The Negro said, "I wish you would come over here and see if you could do something for my horse, because if I lose my horse I might lose my crop." So this gentleman went over and looked at the horse. It was a very poor horse, lean and bony. He said to the Negro, "Look here, old man, suppose you try a little corn." I suggest that in connection with the Warrior River plant we use a little common sense.

The CHAIRMAN. The point was made that the act of June 3, 1916, under which the Muscle Shoals plant was begun by the Government, contains an express provision that the Government alone should operate this plant, and should not make any agreement with any private corporation or company or individual that was inclined to make some contract with the Government. It was intended that the Government alone should do this work. But as the war progressed the officers of the Army found that in order to produce the nitrates very promptly it was advisable to make some arrangement with the Alabama Power Co. to get the use of their plant. So the arrangement was made—I think it was in 1918, or possibly toward the end of 1917—whereby our engineers did make an agreement with the Alabama Power Co.; and this committee has heard that

if we want to accept the Ford offer we shall have to do something to get rid of our contract with the Alabama Power Co. Have you given that any study at all?

Mr. WORTHINGTON. Oh, yes; I have, of course. I do not think I would like to discuss that. Te committee will find its way out, I suppose. But these Alabama Power Co. people are from my State, and I do not want to get into any criticism. It is no time for people in Alabama to be fussing with each other. That is my idea about it, and I am not going to be a part of the fuss.

The CHAIRMAN. Mr. Quin, the other day, in speaking of that company said it was a foreign corporation, with its habitat in Canada, as I now recall. Do you know anything about that?

Mr. WORTHINGTON. I do not think the Alabama Power Co. is a foreign corporation; it is an Alabama company. But I think it is probably controlled by the Canadian company, or was; I do not know whether it is now or not. It was when I was associated with the company.

Mr. QUIN. Mr. Chairman, you did not get my question right. I said that the Alabama Power Co. is owned by the Alabama Traction, Light & Power Co. (Ltd.), which is a corporation of the Dominion of Canada.

Mr. WORTHINGTON. And I said, Mr. Quin, in answer to the question as to what that company was, that it was probably controlled by a foreign company, and that the foreign company was a Canadian company. But I think it is true that the Alabama Power Co. is an Alabama company, organized under the laws of Alabama. In 1915, I think, the situation was that the Alabama Power Co. was controlled by the Canadian company.

Mr. HULL. You spoke of the Warrior River plant. I suppose that is what is called the Gorgas plant?

Mr. WORTHINGTON. Yes, sir.

Mr. HULL. It is the same thing?

Mr. WORTHINGTON. Yes.

Mr. HULL. In the Ford contract we are to turn that over to Henry Ford, as I understand it. Is it your idea that the amount it costs us is to be amortized the same as the other expenses, or is the Government to pay for it and turn it over?

Mr. WORTHINGTON. Of course, it means that you would convey whatever property you convey to Mr. Ford free of any incumbrances.

Mr. HULL. I understand, but is the money to be charged into the river improvement, or is it to be turned over, the same as in the case of plant No. 2?

Mr. WORTHINGTON. Well, that is on all fours with plant No. 2 and the steam plant at No. 1, and the nitrate plant at No. 1.

Mr. HULL. What is hydroelectric power worth in Alabama; what are the rates?

Mr. WORTHINGTON. I do not know. The rates vary, and I have been away from the State for three years. I really do not know what the current rates are.

Mr. HULL. You say they are regulated by law?

Mr. WORTHINGTON. Yes; but I have not been down there recently.

Mr. HULL. Is that power worth $20, or $30, or $50?

Mr. WORTHINGTON. I do not think there is any power sold, although there may be some, as low as $20. There may be some secondary contracts that low. You can find that out from the Alabama Power Co.

Mr. HULL. We could find it out if we had the law of Alabama.

Mr. WORTHINGTON. I shall be glad to assist you in getting that.

Mr. HULL. Could you get that and put it in the record? I think it would be interesting to some of us who are trying to get at the actual facts in connection with this rather conflicting case.

Mr. WORTHINGTON. I will be glad to get any information I can and give it to you.

Alabama Power Co. rates for electric current at Huntsville, Ala., in effect Jan. 1, 1922.[1]

	Cents per kilowatt hour.
Textile power rate (primary), not less than 100 kilowatts: [2]	
First 35,000 kilowatt hours, per month	1.1
Next 35,000 kilowatt hours, per month	1.05
Next 30,000 kilowatt hours, per month	1
Next 100,000 kilowatt hours, per month	.9
All over 200,000 kilowatt hours, per month	.85
Wholesale primary power rate, not less than 100 kilowatts:	
Demand charge [3]—	
Per kilowatt per month for first 100 kilowatts	$1.50
Per kilowatt per month for next 4,900 kilowatts	1.25
Per kilowatt per month for all over 5,000 kilowatts	1.00
	Cents per kilowatt hour.
Energy charge—	
First 1,000 kilowatt hours, per month	3
Next 4,000 kilowatt hours, per month	2
Next 15,000 kilowatt hours, per month	1
Next 30,000 kilowatt hours, per month	.9
Next 50,000 kilowatt hours, per month	.8
Next 100,000 kilowatt hours, per month	.7
Next 100,000 kilowatt hours, per month	.6
All over 300,000 kilowatt hours, per month	.5
Retail power rate, not more than 100 kilowatts:	
Demand charge per kilowatt, per month	$1.50
	Cents per kilowatt hour.
Energy charge—	
First 1,000 kilowatt hours, per month	3
Next 2,000 kilowatt hours, per month	2
Next 15,000 kilowatt hours, per month	1
Next 30,000 kilowatt hours, per month	.9
Retail lighting rate, minimum monthly charge per meter, $1:	
First 200 kilowatt hours, per month	10
Next 300 kilowatt hours, per month	7.5
Next 500 kilowatt hours, per month	5.5
All over 1,000 kilowatt hours, per month	5

Mr. HULL. There is one thing I am a little bit concerned about. In the first place, as I have stated before, it seems to me that plant No. 2 is the one important thing in this whole proposition, in keeping plant No. 2 in such condition so that we can use it at any time in case of war. That, to my mind, is the greatest object we have in making this contract, if we make it. But I am a little concerned about plant No. 1, known as the Haber process plant. If I understood correctly, it is the intention of Henry Ford to convert this plant from a plant for the utilization of the Haber process to an automobile plant. It seems to me that is rather questionable, in view of the fact that there will always be a demand for nitrates, and they say there is no doubt but that this plant No. 1 could be made into a successful plant and probably provide nitrates cheaper than the No. 2 plant. Have you anything you could suggest to the committee in regard to that?

Mr. WORTHINGTON. I could not speak technically on the subject to the extent that others whom you can bring before this committee can, but I will give you my opinion if you care for it.

Mr. HULL. I should like to have your opinion.

Mr. WORTHINGTON. In the first place, it seems to me that the committee can accept it as positively certain that Mr. Ford will never do it, because nobody who would want to be prudent would use that process in view of what happened in Germany a few months ago, where the Oppau plant blew up. That is one thing. Mr. Hull, I understood you to say you felt that perhaps nitrogen or fertilizer compounds could be produced at nitrate plant No. 1 cheaper than at plant No. 2?

[1] Bills in excess of minimum subject to 10 per cent discount if paid on or before 10th.
[2] Minimum annual charge $18 per kilowatt of maximum integrated 15-minute load.
[3] Based on maximum integrated 15 minute load.

Mr. HULL. I have understood so; I do not know.

Mr. WORTHINGTON. I think if you will see those who perhaps caused you to understand it that way and talk to them pretty closely you will find that perhaps you are mistaken, because it is rather singular that if that can be made a success, and admittedly it never has been—and that, I think, is known to the committee—it always did seem very strange to me that if it was a plant that would prove a great success, that the General Chemical Co. who designed it and who let the Government have the process, refused Mr. Glasgow's offer for it, to take the plant for three years, and that the United States would not charge a penny for its investment or the use of the plant, if only the General Chemical Co. would agree to spend $500,000 in further development, investigation, research, and operation.

Mr. HULL. It is not true that it is not a success, because there is a plant at Syracuse, N. Y.——

Mr. WORTHINGTON (interposing). If you please, Mr. Hull, it stands to-day as a failure.

Mr. HULL. But the same process, if we have the correct information, is being used at Syracuse, N. Y., and is a success.

Mr. WORTHINGTON. But they have by-product hydrogen there, and the process is not the same. Nitrate plant No. 1 would have to be rebuilt. That plant at Syracuse is so located because of the coke-oven plant, I think. But I hope you will feel sure, Mr. Hull, that it would be impossible for Mr. Ford to consider—I would say for Mr. Ford as a duty to him, if you required it, that he had better ask you to let him withdraw this offer.

Mr. HULL. We are not saying what we believe; we are trying to get at the facts.

Mr. WORTHINGTON. And I am respectfully trying to state what they are, but on this side of the case.

Mr. HULL. Is there any reason why plant No. 1 should not be utilized in the manufacture of nitrates——

Mr. WORTHINGTON (interposing). There is this to be considered. Suppose it was a success and had proved to be a success. It would not be operated by Mr. Ford where it is. He would double it up with No. 2. We will assume, instead of your having the modified Haber process there (Dejohn's process), that both of your plants had been cyanamid plants as No. 2. Then Mr. Ford would not continue No. 1, because that would be in the face of expensive production as against economical production.

Mr. HULL. Of course, one of the objects of making this contract is the production of nitrates. That is one of those things that induces us to be in favor of something being done down there, and of course we want, if we can, to have it so that they will produce as much of the nitrate as is possible.

Mr. WORTHINGTON. While I had not intended to enter that field unless the committee required it, I will say this: Mr. Ford has absolutely convinced me that whatever is possible at nitrate plant No. 2 now, he will do; that whatever this new world of electrical soil food production will do, he will do it. It is a question that has not been solved. The fixation of nitrogen from the atmosphere is still at the threshold. But I was going to say that personally after all these years of association with it, and the last eight months' association with Mr. Ford and Mr. Mayo, I have no earthly doubt about it. There are a great many other things in this country that I doubt more than that.

Mr. HULL. You have no doubt but that they can produce nitrates at plant No. 2?

Mr. WORTHINGTON. I have no doubt in the world; they would not be confined to the present method entirely, however; oh, no.

Mr. HULL. Have you studied the question so that you could tell us how cheaply it can be done?

Mr. WORTHINGTON. I think only time can determine that. But I have long felt very sure that, as this committee was advised in 1916—and since then there has been repeated evidence of it—complete fertilizers can be produced at Muscle Shoals and sold at perhaps one-half, or, I feel sure, at one-third less than the farmers have been paying for it in normal times.

Mr. HULL. Not one-half or one-third less than they are paying at the present time?

Mr. WORTHINGTON. Than they paid before the war, in normal times. While I do not have it here, I would like to show the committee the report of an English commission which arrived at the same conclusion.

Mr. HULL. How long is that report?

Mr. WORTHINGTON. It is one of the most voluminous documents on the subject. There were 15 or 20 members of that commission, including engineers and scientists.

The CHAIRMAN. What is the name of the report?

Mr. WORTHINGTON. It is the report of the British Nitrogen Products Commission. We will bring you a copy so that you can see it. There are only a few copies of it in this country.

Mr. HULL. Your relations with the improvement of the Tennessee River at Muscle Shoals have brought you in some contact with the fertilizer people, have they not?

Mr. WORTHINGTON. Oh, yes; at times.

Mr. HULL. Have they encouraged you at all in trying to develop the Muscle Shoals proposition?

Mr. WORTHINGTON. All of the farmers' organizations, that I ever discussed the subject with, beginning in 1915, have, without exception, indorsed it. Some of them were reluctant and slow and others investigated it on their own account but without an exception they have indorsed it and we have cooperated with them. We have furnished them information just as we have furnished other people information—such as we have.

Mr. HULL. How about the manufacturers of the finished fertilizers; do they encourage you at all.

Mr. WORTHINGTON. Not unless they do it in my sleep.

Mr. HULL. Have they ever interviewed you?

Mr. WORTHINGTON. What was the question; have they ever interviewed me?

Mr. HULL. Yes; on this proposition?

Mr. WORTHINGTON. Yes; I have been interviewed but it would not add anything to your information to press me for an answer.

Mr. JAMES. Were you present in the Judge Advocate General's office when this proposition was being drawn up?

Mr. WORTHINGTON. No, sir; not all the time. The Judge Advocate General's office requested, in keeping with the Secretary of War's directions that they draft the offer in the legal form, that they get in touch with Mr. Ford's representatives, and they called me in and a few days later Mr. Mayo came here and conferred with them.

Mr. JAMES. Were you present there at the time?

Mr. WORTHINGTON. I was present when they sent for me.

Mr. JAMES. The Acting Judge Advocate General stated to the committee the other day that he understood the flowage rights were to be secured by the Government and to be paid for by Mr. Ford. What is your understanding of that?

Mr. WORTHINGTON. I have not seen Mr. Ford since he signed this final paper. I am advised, however, that he did not want to have anything to do with that. I will suggest, however, to this committee—and I do that on my own account and ask to be excused by Mr. Mayo—but speaking for myself, there is nothing in his proposition that he says he will not do it.

Mr. JAMES. In your conversations with Mr. Ford it was understood that nitrate plant No. 2 would be used for the production of nitrogen and other fertilizer compounds, was it not?

Mr. WORTHINGTON. All the time? Might I, if you will allow me, state this, that Mr. Ford, when he went to Muscle Shoals, never thought of nor did I suggest in our discussions on June 6 and 7 that he take the nitrate plants. But, when Mr. Ford and Mr. Mayo had examined them and spent a full day there on June 14, Mr. Ford said that nobody could ask the United States for that power without being willing to get under the fertilizer proposition and he repeatedly said he did not want to get into the nitrate business, but that the investment there was so great and when it had been explained to him how he possibly could contribute to the agricultural welfare of the country, he said: "Well, I will undertake it as a public service." And his proposition indicates that, I am sure.

Mr. JAMES. The compounds that are to be manufactured at nitrate plant No. 2 could be used for other purposes than in the manufacture of fertilizer, could they not?

Mr. WORTHINGTON. May I ask you to repeat that question?

Mr. JAMES. I say the compounds that are to be manufactured at nitrate plant No. 2 could be used for other things than the manufacture of the finished fertilizer?

Mr. WORTHINGTON. I do not exactly catch the meaning of your question. Do you refer to plant No. 2?

Mr. JAMES. Nitrate plant No. 2 and the provisions contained in article 14 of the Ford offer.

Mr. WORTHINGTON. So far as I know, it could not go into anything else. I can readily see how, with the possible changes that will be made there, depending upon the process adopted, you might have some results, you might get some compounds that would not be fertilizer compounds at all, but might be something else. But the primary product produced in volume would be fertilizer compounds. In coke making in retort ovens the primary product is coke—but they get ammonium sulphate as a by-product. Here the primary product sought is fertilizer. Congressman Bankhead says I did not quit understand your question, that the present possible production of fertilizer compounds, as I get it, you think might possibly be used for some other purpose?

Mr. JAMES. I asked you this question: Mr. Ford is going to manufacture nitrates and other fertilizer compounds at nitrate plant No. 2; does Mr. Ford intend to use that for fertilizer alone?

Mr. WORTHINGTON. That would be the primary purpose.

Mr. JAMES. Some of these things could be used for other purposes than the manufacture of fertilizer?

Mr. WORTHINGTON. Some of these things—do you mean some of the plants or some of the things produced?

Mr. JAMES. Some of the things he intends to produce. Paragraph 14 of the offer says:

"In the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period."

Mr. WORTHINGTON. That is, with some conditions and changes and processes that can be employed. There would be, for instance, phosphoric acid.

Mr. JAMES. There is nothing in this article which says that Mr. Ford shall use the entire production of nitrogen and other fertilizer compounds for the manufacture of fertilizer alone, is there?

Mr. WORTHINGTON. But you can not use those compounds you mentioned for any other purpose in that volume; you might in a very small way.

Mr. JAMES. Then there ought to be no objection on the part of Mr. Ford to stating in the offer that everything manufactured at nitrate plant No. 2 is to be used for the manufacture of fertilizer, and for no other purpose?

Mr. WORTHINGTON. It would be impossible, because there may be other processes in existence that will, in spite of anything or any intention on his part, make something else.

Mr. JAMES. I wish you would show me where there is any guaranty in this contract that the company Mr. Ford is to organize is to manufacture any particular amount of fertilizer. If it is not contained in paragraph 14, where is it?

Mr. WORTHINGTON. I have to acknowledge that if that is not clear, we can not make it clear.

Mr. JAMES. Do you think Mr. Ford would have any objection to stating that products of that kind would be used for fertilizer alone?

Mr. WORTHINGTON. I think he would be absolutely prohibited from stating it; he could not comply with any such terms.

Mr. JAMES. How many tons of fertilizer do you suppose Mr. Ford would agree to guarantee per annum?

Mr. WORTHINGTON. The equivalent of 110,000 tons of ammonium nitrate, as he says.

Mr. JAMES. How many tons of fertilizer do you figure that would make?

Mr. WORTHINGTON. With a mixture which is very common, 2–8–2, it would be about 2,000,000 tons.

Mr. JAMES. Do you think Mr. Ford would guarantee to produce a minimum of 2,000,000 tons of fertilizer?

Mr. WORTHINGTON. That answer which I made is the interpretation of section 14 of the contract.

Mr. JAMES. If that is the correct interpretation, why not put it in the agreement.

Mr. WORTHINGTON. You take the question of the production of fertilizer at nitrate plant No. 2 and the possible processes to increase the percentage of the soil food in the compounds that would be used to compose a complete fertilizer, and as the quality goes up the tonnage required would be less. As I do not seem to get along very well in straightening this thing out, I would suggest that you let Mr. Waldo try his hand at it.

Mr. JAMES. Mr. Ford intends to guarantee a certain amount of fertilizer?

Mr. WORTHINGTON. It is stated here.

Mr. JAMES. What is the number of tons—you say it would be 2,000,000?

Mr. WORTHINGTON. This would be expressed in its production of ammonium nitrate. It would be 38,500 tons of nitrogen. That can be put in another form. I take the liberty, without consulting Mr. Mayo—of course, he is speaking for Mr. Ford—I take the liberty of saying that this plant will not be confined to nitrogen compounds alone, but with those phosphates and other deposits there within 40 miles. Of course, I think in the course of your hearing you will understand that with perfect clarity.

Mr. JAMES. Evidently you do not want to answer the question.

Mr. WORTHINGTON. Congressman, I assure you I do. I may have failed to do it, but I do really want to answer your question.

Mr. JAMES. You intended to answer it until Mr. Mayo whispered to you.

Mr. WORTHINGTON. That is very unjust to Mr. Mayo and unjust to me. I positively assure you, upon my word of honor, that he did not color my reply at all. I want you to know I am of a friendly disposition and with friendly intentions, and I want to try to answer your questions. I might have failed, but it is very difficult to answer what you are asking, I assure you, because it involves so much.

Mr. JAMES. I am in favor of the proposition, but it appears to me some of the witnesses are holding back some of the information they really know.

Mr. WORTHINGTON. I am not holding back anything, I can state to you. I am sure I can say with a good deal of confidence that it is true that I never held any information back on this subject that I ever had, because it would do me no good in the world to do it. I have not any interest in it. I am very frank to tell you all I know about it and also that I have a lot to learn about the chemistry of fertilizer production. The more I study it the less I think I know about it.

(Thereupon, the committee took a recess until 2 o'clock.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF MR. J. W. WORTHINGTON—Resumed.

The CHAIRMAN. Mr. Worthington, Mr. James, I believe, would like to ask you some further questions.

Mr. JAMES. Pursuant to our conversation this morning, will you put in the record to-morrow the total number of tons of fertilizer you figure will be made?

Mr. WORTHINGTON. I will be glad to prepare a very full statement in regard to that.

Mr. JAMES. Showing the number of tons of fertilizer Mr. Ford agrees to make under the proposition.

Mr. WORTHINGTON. Yes.

NOTE.—Mr. Ford agrees in his offer "to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other commercial fertilizers (said capacity being equal to approximatetly 110,000 tons of ammonium nitrate per annum) throughout the lease period," etc.

He therefore agrees to make nitrogen commercial fertilizers and other kinds of commercial fertilizers requiring for their nitogen content an amount of nitrogen equal to the amount of nitrogen contained in 110,000 tons of ammonium nitrate.

Since ammonium nitrate is 35 per cent nitrogen, 110,000 tons of ammonium nitrate contains 38,500 tons of nitrogen. This is sufficient nitrogen to make—

	Tons.
Ammonium sulphate (24 per cent nitrogen)	160,000
Sodium (Chilean) nitrate (16 per cent nitrogen)	240,000
2–8–2 commercial fertilizer (2 per cent nitrogen)	1,925,000

It should not be understood, however, that Mr. Ford intends to make any of these, for it is his expressed purpose to produce a more concentrated plant food than any of the above forms.

Mr. MILLER. Mr. Worthington, we all were interested in your very thorough analysis of the desirability of water power, and along with it, it really seems a shame that this great water energy has gone to waste for so many years while the world has been industriously working out its supply of fuel in the shape of coal. I may say, Mr. Worthington, that some of my colleagues on the committee and some of my brethren in the House agree that we are now engaged in these hearings for the purpose of determining a way of salvaging this war necessity at Muscle Shoals. I may say for my part that I disagree with many of my colleagues.

We are not engaged in undertaking to salvage a war necessity, because this was one of the enterprises of the American Government initiated before we were in any war, and was initiated simply and solely for the purpose of what we might call nitrate preparedness of this Government, and this is one of the enterprises, and, perhaps, the only one that never was intended to be salvaged. It was to be one of the standby, permanent adjuncts of the War Department, and was not to cease, and never was a war emergency; but the legislation that created this enterprise at Muscle Shoals was of a hybrid character, the production of ammonium nitrate for war purposes in time of war and in time of necessity, and during times of peace the production of some substance that could be used to advantage in times of peace, and it never was intended as a war measure.

Now, you are very familiar with the electric power contained in the Tennessee River. You have made that a special study, as I understand it, Mr. Worthington.

Mr. WORTHINGTON. Somewhat.

Mr. MILLER. And, notwithstanding the great advantages of water power over steam power, there has been, up to this good hour, no private company that has been willing to take hold of the Muscle Shoals proposition and develop it with the purpose in view of generating hydroelectric power; that is a fact, is it not?

Mr. WORTHINGTON. Except Mr. Ford's offer.

Mr. MILLER. I say up to this hour there has been no person willing to take it over before this tentative offer of Mr. Ford. All the years before the Government went down there in 1916, no private company in the world was willing to embark upon the enterprise of developing the hydroelectric energy at Muscle Shoals?

Mr. WORTHINGTON. Oh, yes; there was a company. The Alabama Power Co. was quite willing and made an offer on it to the United States.

Mr. MILLER. How long has the Alabama Power Co. been in the business of producing hydro-electric power in northern Alabama.

Mr. WORTHINGTON. It has not been in that business in northern Alabama at all, but the Alabama Power Co. owned the dam site upon which and at which you have built Dam No. 2.

Mr. MILLER. Well, it never did anything to develop power there, did it?

Mr. WORTHINGTON. Nothing except to make the most exhaustive studies of it and made a proposition to the United States which the United States engineers recommended to Congress that it accept, but it never got any further than the Rivers and Harbors Committee. It never was reported at all.

Mr. MILLER. Well, there are a large number of those cases throughout the United States where companies survey the possibilities of water power but never do anything.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And there are a multitude of applications down here on file now. The trouble seems to be, Mr. Worthington, the reluctance of the financial world to invest in hydro-electric plants. In other words, a financial institution may lend $20,000,000 on an industrial plant that is engaged in the production, say, of farm machinery, and their security may become jeopardized and they may have to take it over, because the production of farm machinery has been at a loss, but that plant can be converted for the production of some other necessity that may be a financial success, whereas if you put your money into a hydro-electric plant, you are limited to one output, and you can never convert it into anything else. We are experiencing in this country and have been from the beginning of the development of our hydro-electric plants what you might call the hestitation of financial people to invest enormous sums of money in them, and this particular development at Muscle Shoals is one that takes an enormous amount of capital.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And probably that accounts for its not having been developed some years ago.

Mr. WORTHINGTON. It does.

Mr. MILLER. Your remarks this morning were very interesting and I am pleased with them, Mr. Worthington, because I come from a water power State.

Mr. WORTHINGTON. You certainly do.

Mr. MILLER. A State that probably has more water power than any State in the Union per square mile, and roughly estimated at one-seventh of the undeveloped water power.

Mr. WORTHINGTON. One hundred and twenty-five horsepower per square mile.

Mr. MILLER. The great factor in that is the Columbia River of our country, probably only exceeded by Muscle Shoals or rather, we are the only one that exceeds Muscle Shoals in potential energy. The water power development is what will mean increased activity and produce the substantial things of value connected with the Ford enterprise, and it is the water power end of it that constitutes the major value of the enterprise.

Mr. WORTHINGTON. I do not know that I exactly grasp or comprehend your question, but that is primary to everything that is to happen there that Mr. Ford can do.

Mr. MILLER. You related to the committee this morning that in one of your interviews with Mr. Ford, if not the first one of your interviews, you mentioned the production of fertilizer, about which he hesitated at first and then afterwards agreed to take up that angle of it.

Mr. WORTHINGTON. Yes, sir.

Mr. MILLER. So, then, it must have been the water power——

Mr. WORTHINGTON (interposing). Oh, certainly. He went to Muscle Shoals to see the water power primarily.

Mr. MILLER. That is what I have been trying to satisfy myself about in my own mind.

Mr. WORTHINGTON. You may be satisfied of that, because he would not have gone there to look at the nitrate plants.

Mr. MILLER. No; or anyone else.

Mr. WORTHINGTON. That is right.

Mr. MILLER. Nobody in the world would go there to look at the nitrate plant. It is the water power that is of value.

Mr. WORTHINGTON. Yes; but he would be interested in the nitrate plant after he saw the water power.

Mr. MILLER. Oh, yes; but, after all, it only takes in the vicinity of 100,000 horsepower to drive nitrate plant No. 2 to its full capacity.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And we are developing, according to Mr. Ford's proposition here, nearly 1,000,000 horsepower, of which 850,000 is to be hydroelectric, 110,000 of it, approximately, steam power, and out of the 850,000 hydraulic power some 230,000 of it will be primary power.

Mr. WORTHINGTON. With the steam power included.

Mr. MILLER. Yes; with the steam plant of approximately 110,000 horsepower. Now, taking in view the proposition that this nitrate enterprise at Muscle Shoals was designed and constructed as a permanent proposition; that it was never intended to be salvaged and sold and disposed of by the United States, and at best that it was intended to be kept in a stand by condition for the purpose of producing this war necessity and the production of other things in time of peace. Now, according to Mr. Ford's offer we are parting with that which we never intended to part with. That is the basis of it. We are to part with our title to these two vast nitrate plants which the Government has always intended it should cling to; but, in return for that, while we do part with them, Mr. Ford's proposition is that during the lifetime of his lease this plant shall be kept intact, available to the Government for the very purpose it was constructed for. So that as I look at it, it amounts to little in whom the title may be vested. What we are after is the stand by of that great plant, which we can take advantage of in case of necessity.

Mr. WORTHINGTON. Yes.

Mr. MILLER. Now, there is another angle to that, and that is if the Government remains the owner of this property and the title in fee continues in the Government, in case of an emergency the Government would be using its own property, whereas with a lease we would be using another man's property and

be paying correspondingly for it. That is the way I view it, and that is your analysis of the situation, is it not?

Mr. WORTHINGTON. I think you have analyzed it, but do you not think, Mr. Miller, you have omitted there to include in your statement the important fact that he does maintain it and keep it ready, whereas, if I understand you, if the Government should keep it it would only continue it idle, maintain and watch it, and keep it ready. Do I catch that as your point?

Mr. MILLER. No; I do not think we quite meet.

Mr. WORTHINGTON. I was not sure on that point.

Mr. MILLER. The purpose of the legislation by which this enterprise was first started, under the national defense act and the initial appropriation of $20,000,000, the Congress had just as much in view in the industrial future of this plant as it had the military future of it. So that it is of that particular character, the two utilities blended, and I might say that the way the Military Affairs Committee has jurisdiction of this hearing is because we are dealing with a piece of property that was constructed under the national defense act and has always been operated by the War Department.

Mr. WORTHINGTON. Yes.

Mr. MILLER. Let me ask you, Mr. Worthington—I have never been at Muscle Shoals, much to my regret.

Mr. WORTHINGTON. I hope you will come, and I invite you to come there.

Mr. MILLER. Thank you, very kindly. What facilities are there now at Muscle Shoals in aid of navigation?

Mr. WORTHINGTON. Well, really, none.

Mr. MILLER. No steamers drawing any draft of water——

Mr. WORTHINGTON (interposing). No; not at all. This dam has progressed in its construction to the point that the navigation that we had had previous to this dam's partial construction has been cut off.

Mr. MILLER. It is a complete barrier to present navigation?

Mr. WORTHINGTON. It is to-day.

Mr. MILLER. Now, before this dam was constructed——

Mr. WORTHINGTON (interposing). We have a canal beginning at Lock 9, so called, 3 miles up the river from this dam, and that portion of the stream between Dam No. 2 and Lock 9 of this canal is a shoaly, unimproved stretch of the river and can be used by boats only in the wet season; that is to say, sometimes three or four or more months in the year, and almost always for a month or two you could not have any river traffic over it. This canal, therefore, was really isolatetd. It has nine locks on the north bank of the river and two locks on the south bank, but between the eastern end of the locks on the north bank and the western end of the locks on the south bank is another very shoaly and unimproved stretch.

I may say to you that a practical answer is that the navigation was unreliable, expensive, and that as it stood the cost of those locks and that canal, Mr. Miller, was an absolute waste. There is no denying it.

The CHAIRMAN. This morning you stated to the committee that if the members desired to see a moving picture of Muscle Shoals we could go to some place down here on Pennsylvania Avenue.

Mr. WORTHINGTON. Yes; just two blocks away.

The CHAIRMAN. We have here in this building the caucus room, which is quite large and which has its own machine.

Mr. WORTHINGTON. Then, we will bring the films and exhibit them to you at any hour that you select.

The CHAIRMAN. I was going to ask if there would be any objection to having this committee and such other Members of the House as may desire to be present see the whole thing?

Mr. WORTHINGTON. Absolutely none. We shall be glad to exhibit them at any time you may select.

Mr. MILLER. How far is the Tennessee River navigable upstream from Muscle Shoals?

Mr. WORTHINGTON. The navigation stretches are interrupted by nonnavigable stretches. After you get to Decatur, Ala.——

Mr. MILLER (interposing). How many miles is that from Muscle Shoals?

Mr. WORTHINGTON. That is about 35 miles from the canal; that is, from Lock A, which is located at the upstream or eastern end of the canal. Then, if I may continue, please, there is a stretch of the river that is navigable nearly all the year around, but at very low stages the navigation is interrupted. After you get upstream farther east or northeast there is a stretch of some 40 or 50 miles that needs improvement. There is an improvement now authorized on which work is suspended at the present time on account of funds, which improvement is being made southwest of Hales Bar, and Hales Bar is the power-navigation dam that is 27 miles, I believe, south of Chattanooga. That was built by private interests under a 99-year grant by Congress. That is a slack-water pool, providing about 33 to 35 miles of very perfect navigation, of course, and then after that the navigation is interrupted very frequently. I would like to ask you, if you can possibly find the time, to come and look at these maps, which answer better than I can possibly put into words, the questions you ask about the navigation.

Mr. MILLER. That would be very desirable and is very kind of you.

Mr. WORTHINGTON. It would give a complete answer, and you will find some very interesting facts about it; and you will also find there has been a great deal of money wasted. I do not criticize anybody. I am just stating the facts.

Mr. MILLER. We can not get maps into the hearings, however.

Mr. WORTHINGTON. It is a pity you can not.

The CHAIRMAN. The chairman will ask the Speaker of the House to allow those maps to be put into the hearings. The Speaker can authorize that, and I will take the first opportunity to present that matter to him.

Mr. WORTHINGTON. I am going to ask you, Mr. Miller, to go around some evening with me and take a brief look at them. It will not take you more than 30 minutes.

Mr. MILLER. Now, the distance following the river channel upstream from Muscle Shoals to Chattanooga is approximately how many miles?

Mr. WORTHINGTON. About 188 or 190 miles.

Mr. MILLER. Following down the stream from Muscle Shoals to the mouth of the Tennessee, where it flows into the Ohio——

Mr. WORTHINGTON. Two hundred and fifty-nine miles.

Mr. MILLER. Then, you are approximately in the middle, between Chattanooga and the mouth of the river.

Mr. WORTHINGTON. Yes; and you have hit the nail on the head about the whole thing. During all these years the trouble was that this very serious obstruction at Muscle Shoals of some 37 miles blocked the navigation and prevented—well, really, it was practically impossible for traffic from the upper river to get through.

Mr. MILLER. It was blocked in the middle of that stretch.

Mr. WORTHINGTON. Yes, sir: that was exactly the situation, and it was the expense, as you have suggested, at Muscle Shoals that made it look for a long time utterly impossible.

Mr. MILLER. Are there any obstructions down the river.

Mr. WORTHINGTON. The navigation improvement of the Tennessee River from the foot of Muscle Shoals, and practically at this dam, is completed to the Ohio River at Paducah.

Mr. MILLER. How far is it from the confluence of the Ohio and the Tennessee?

Mr. WORTHINGTON. Forty miles to the Mississippi.

Mr. MILLER. Then in the event this enterprise goes through, you have an unobstructed channel by water from Muscle Shoals to the very heart of the country.

Mr. WORTHINGTON. That is exactly it.

Mr. MILLER. You can go up the Ohio and up the Mississippi——

Mr. WORTHINGTON. Yes, and down the Mississippi to New Orleans.

Mr. MILLER. Yes; down to New Orleans and down and up the Missouri River.

Mr. WORTHINGTON. Exactly.

Mr. MILLER. And then you will be connected with the very heart of the country which, of course, is the Mississippi Basin.

Mr. WORTHINGTON. Yes, sir.

Mr. MILLER. You have, of course, examined the offer of Mr. Ford, and if I understood you in answer to Mr. James, you stated that you were present part of the time when it was being drafted in the Judge Advocate General's office?

Mr. WORTHINGTON. Yes, sir.

Mr. MILLER. I suppose that was on account of your interest to get something established in the valley of the Tennessee River; that was your primary purpose?

Mr. WORTHINGTON. That, and my agreement with Mr. Ford that I would continue, since he signed this, to furnish such information and assistance as I could.

Mr. MILLER. And the assistance you have rendered is wholly in a disinterested way?

Mr. WORTHINGTON. Absolutely; almost to the point of being foolish.

Mr. MILLER. And up to the present time Mr. Ford is the only man in the country of sufficient enterprise and wealth to make any coherent proposition to the Government for this enormous expenditure we have made.

Mr. WORTHINGTON. Let me answer that, if I may be permitted to, in this way: He is the only man that has done so.

Mr. MILLER. Of course, in this agreement the identity of Mr. Ford is destroyed. his personal identity with this concern, because the second paragraph of the provision provides that he creates or organizes a company and thereby the personal relation of Mr. Ford to the Government will be nil, and the arrangements and the intercourse will all be between a corporation and the United States Government. That is to be the future, as marked out by this offer of Mr. Ford, except Mr. Ford agrees and covenants to control the corporation.

Mr. WORTHINGTON. Yes; I was just going to say that I feel very confident he will absolutely control and dominate it as long as he lives. Of course, I could not say beyond that point, but the proposal as signed by him binds his estate.

Mr. MILLER. Of course, we do not look upon that as any serious factor in the matter, because under the law of the State of Michigan, in common with the law of nearly ever State of the Union, any claim against an estate has to be filed within one year after the death of the party.

Mr. WORTHINGTON. That is true; but, Mr. Miller, I do not believe you will ever get Muscle Shoals developed unless there is some confidence in somebody.

Mr. MILLER. No one disputes that , Mr. Worthington, and I believe that every member of this committee is looking for something in the way of this offer.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And while some of us may probably on the spur of the moment appear hostile to this enterprise, we are searching for the relations between the Government and this company and where the Government is coming out financially on this enterprise.

Mr. WORTHINGTON. Yes.

Mr. MILLER. Is there a public-service commission in the State of Alabama?

Mr. WORTHINGTON. Oh, yes.

Mr. MILLER. That puts the price upon electric energy?

Mr. WORTHINGTON. Oh, yes.

Mr. MILLER. It controls the prices?

Mr. WORTHINGTON. Yes; they fix prices.

Mr. MILLER. We are dealing, then, with one of those institutions where the Government owns the origin of power, the raw product.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And the State controls the output and the price of it.

Mr. WORTHINGTON. Yes.

Mr. MILLER. We are dealing with that kind of an enterprise.

Mr. WORTHINGTON. Yes.

Mr. MILLER. The probable future of this thing, should this offer be accepted, will be of inestimable value to the people of that locality and surrounding territory for hundreds of miles, in two particular channels, one of which is the industrial development of the community and the second is the navigation of the Tennessee River.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And it is from those two angles that the people of that entire geographical locality are intensely interested in the future of Muscle Shoals.

Mr. WORTHINGTON. Yes; and I hope you would be willing to add the electrification or the improvement of rail transportation.

Mr. MILLER. Oh, yes; I would include that as a part of the industrial end of it.

Mr. WORTHINGTON. Yes.

Mr. MILLER. Now, according to this offer, Mr. Worthington, a sum of money variously estimated is required to complete these two dams. I believe that is estimated by Mr. Mayo at $42,230,000; is that correct?

Mr. WORTHINGTON. I did not have the opportunity to hear Mr. Mayo testify.

Mr. MILLER. I think that was the sum, was it not, Mr. Mayo?

Mr. MAYO. That is right.

Mr. MILLER. The Engineers place it at $50,000,000. Now, probably, there are only two ways of raising that money; one is by increasing taxes throughout the country, and the other is by a bond issue, by which the interest that Mr. Ford would pay and agrees to pay under his contract would be sufficient to meet the expenses of the Government to pay the interest on the bonds, provided, of course, that the Government can negotiate the bonds at par at 4 per cent. That is the limit of Mr. Ford's offer in all this thing—4 per cent. Now, practically, I dare say, in your search for improvements of the Tennessee River and the installation of industrial concerns there, utilizing the splendid water power of the Tennessee River, you have been unable to attract 4 per cent money to these enterprises.

Mr. WORTHINGTON. That is quite true; you could not do that.

Mr. MILLER. Then, it is quite clear that the excess between what these bonds can be sold for and the 4 per cent Mr. Ford pays will have to be met out of the public Treasury; and I think you will also agree with me that the net proposition of Mr. Ford is that the Government will finance this proposition at 4 per cent. That is the proposition, is it not?

Mr. WORTHINGTON. Yes.

Mr. MILLER. In other words, the Government is lending its credit to Mr. Ford, which credit is not to exceed 4 per cent.

Mr. WORTHINGTON. Yes; but the Government, if we accept the statement—and I am prepared to accept it if you wish as you have just announced it—but the Government itself, however, is financing its own property.

Mr. MILLER. That is quite true, Mr. Worthington.

Mr. WORTHINGTON. And it is doing no more, if I may be permitted to call the attention of the committee to the facts, it is doing no more than it is doing on other rivers. It is doing that on the Ohio, which I think it ought to do, only it does not do enough and does not improve the navigation enough. In this particular case I hope you will remember that you get on your investment 4 per cent and that you get the return of the principal at the end of the lease period, whereas on the Ohio River—and let me, if I may, impress the committee with this fact—you never do get a single cent's interest and you never do get a single penny of the principal returned; and I may go further. Out in your State—I do not know for how many projects nor to what extent the capital has been invested—but I think you have in your own State some of the irrigation projects of the country. I think in that policy everybody agrees to the wisdom of it, but it is a fact, also—and drawing a friendly contrast—the investment stands to-day at a net total, in your Reclamation Service, of $125,870,830, which you invest to make arid lands productive. Now, you do not get a penny's interest, and you get the principal returned very slowly; and I must ask you to let me hold to one thing, that in respect to the reclamation policy of this Government, there is no difference in policy at Muscle Shoals, because while you to-day may not have the confidence and feeling of certainty that others have and that I have, in time you will see demonstrated there that you can do as much with water for agriculture east of the Mississippi as you can do with water for agriculture in the State of Washington and in other reclamation States.

Mr. MILLER. Except you do it through a different medium.

Mr. WORTHINGTON. Exactly. In one case, you use the water to get the fertilizer and carry it to the land, but out there you put the water on the land.

Mr. MILLER. I am aware, Mr. Worthington, that the Government lends money to the reclamation fund without any interest.

Mr. WORTHINGTON. Yes.

Mr. MILLER. And the fund is amortized through a certain system that they work out. Now, under Mr. Ford's offer, there is also a plan of amortization.

Mr. WORTHINGTON. Yes.

Mr. MILLER. He pays semiannually $19,868 on Dam No. 2, and semiannually $3,505 on Dam. No. 3, which amounts to something like $47,000 a year.

Mr. WORTHINGTON. $46,746.

Mr. MILLER. And that is put in there for the purpose of amortizing the cost of those dams, and it is figured that it will amortize them if placed at interest compounded semiannually at 4 per cent.

Mr. WORTHINGTON. The offer does not mention the rate, but 4 per cent, if secured, Mr. Miller, will do it.

Mr. MILLER. If that sum of money with payments semiannually in those amounts can be put at interest at 4 per cent compounded semi-annually, the figures are, I believe, that it would amount to something like $49,000,000 at the expiration of this leasehold interest.

Mr. WORTHINGTON. That is right.

Mr. MILLER. And, of course, that would be a very difficult thing, practically, to do. In the first place, we are confronted with the same proposition that financial institutions were in financing this thing. It is not attractive for that kind of investment. I know of no concern in the United States of sufficient stability where this fund could be deposited for 100 years that would take any deposit on any such terms as that.

Mr. WORTHINGTON. Of course, I am not prepared to resist your fear, but I do feel that in view of your very large investment down there, whether fortunately or unfortunately made, it is made, and I do feel there ought to be some way for the Federal Reserve Board to take care of this, and I believe if you provided for it, that they can and will.

Mr. MILLER. In other words, it is a financial enterprise that no one but the Government could be the banker in.

Mr. WORTHINGTON. Now, if I may, I would like to right now settle one thing. Muscle Shoals has always been, is now, and always will be too big for any private enterprise. We might just as well face the facts. They are not new.

Mr. MILLER. That is the reason I say that no enterprise has gone in there that was willing to take it.

Mr. WORTHINGTON. Yes; and, moreover, long ago I came to the conclusion that they did not have any business there.

Mr. MILLER. Now, here is what the Ford offer gets down to. Financing it with 4 per cent money, which no private enterprise could do, paying it back in an amortization fund, compounding it semiannually at 4 per cent, which no private enterprise could do. Now, there is the Government's angle to this thing, so far as the dams are concerned. Coupled with that is Mr. Ford's purchasing the fee of an investment of between $105,000,000 and $106,000,000 less $17,000,000, that has gone into the dam, or approximately eighty-eight or ninety million dollars.

Mr. WORTHINGTON. Yes; though I do not agree that it is impossible for a private concern to invest money at 4 per cent, compounded semiannually. Thousands of banks do that for their savings depositors every year.

Mr. MILLER. In an enterprise that the Government never intended to part with, and Mr. Ford is buying it at 4 cents on the dollar, or at practically 4 cents on the dollar.

Mr. WORTHINGTON. Well, may I suggest that the intention, I think, is not the controlling point. What you intended or did not intend during the war was never thought of. It is a fact, whatever your intention was, that you built the biggest smokeless-powder plant on the face of the earth and you sold it out for 3 cents on the dollar; and, moreover, you parted title and it is gone, and you will not find it there as Mr. Ford offers to let you find the nitrate plant if you ever get into trouble; and I can go down the line with the sales of your wooden ships and if I might wish to I could bring a sad story here about cantonments, and they are all gone; and while I expect Mr. Ford will give me a rap over the knuckles for defending this thing because he does not want it done in that way, at the same time I can not remain silent when there are such horrible examples that offset this horrible example you set up at Muscle Shoals.

Mr. MILLER. Your analogy, Mr. Worthington, is something I do not intend to get into an argument about, as to the enterprise at Nitro, W. Va., or any of the others, but this is a distinctive enterprise that did not grow out of the war.

Mr. WORTHINGTON. That is true.

Mr. MILLER. Keep that plainly in mind, Mr. Worthington.

Mr. WORTHINGTON. That is true; I grant it.

Mr. MILLER. The Government embarked upon this enterprise before we had any war.

Mr. WORTHINGTON. Yes.

Mr. MILLER. Possibly with a war imminent, which some people refused to heed, but the Congress scented what was in the future before we entered into the war—embarked on this one enterprise for nitrate preparedness, so you can not place it alongside one of those enterprises which was a direct outgrowth of the war and which we constructed after we got into the war. This was something that was provided for prior to the war, and the whole philosophy of the legislation was in the absence of war between this country and any other country in the world; and therefore I say it was one of the enterprises and the only one, I dare say, that the Government embarked upon as a permanent enterprise that would endure throughout the future. Now, we are taking that plant, so constructed, and instead of following out the legislation as it was intended, that that should be a permanent proposition for the manufacture of munitions

to be used in case of war and the manufacture of substances useful in times of peace, like fertilizer, the proposition now pending before us is that we shall part with it.

Mr. WORTHINGTON. Well, you will, I am sure, be indulgent enough with me to grant that the only thing left for me to say respectfully to you is that that is what you have got before you in the Ford offer for your respectful decision.

Mr. MILLER. Yes. Then the proposition pending before us is exactly the antithesis of what the Congress intended in establishing this plant. They intended it should be a permanent enterprise. Now, the proposition of Mr. Ford is to buy it and the Government is to part title with it at 4 cents on the dollar.

Mr. WORTHINGTON. Well, I can not help, Mr. Miller, from asking you, I just can not help it, if you do not intend to do it by means of this antithesis or some other "ant-way," what are you going to do with it? If the Ford offer does not solve it and is not acceptable, you will pardon a poor fellow who has been in this Muscle Shoals game for apout 15 or 16 or 20 years for being interested enough to inquire, what are you going to do with it?

Mr. MILLER. That is exactly what I want to suggest to you. The purpose of this legislation was that the Muscle Shoals proposition would be good for two purposes, one in time of war and one in time of peace, and now we are investigating what shall be done with it in time of peace, and we have before us the concrete offer of Mr. Ford who, up to this good hour, is the only gentlemen of sufficient enterprise and wealth to make a concrete proposition.

Mr. WORTHINGTON. Which offer makes it permanent for 100 years.

Mr. MILLER. Now, there may be this angle to it: That before the expiration of this leasehold interest of 100 years, industrial chemistry, applied chemistry, or economic chemistry and its relation to economics, may discover an entirely new method of generating ammonium nitrate, as you suggested this morning, but the cyanamid process, together with the Haber method, are the two best ways of producing it in sight now, outside of the coke-oven method.

Mr. WORTHINGTON. I believe there are witnesses to follow me who, as far as the field of commercial chemistry is concerned, could be more instructive than I can. However, I want to grant one suggestion that I understand you make, that the great possibilities of the future, say, in just the one field of soil foods produced by electric-furnace methods, are so inviting and promise so much that I do not think anybody in the world can tell now what will happen; but I do not think that because we can not tell we should not try to find out.

Mr. MILLER. It would be the very goal of shortsightedness not to try to find out these things and to keep abreast of the world.

Mr. WORTHINGTON. Yes; and without speaking to the committee with excessive partiality for Mr. Ford, I must ask you to remember that he is the only one that has had the courage to say he would try to do it.

Mr. MILLER. There is embodied, then, in this proposition, several elements, all of which are of value, enormous value, some directly flowing to the Government, others flowing to your State; some indirectly to your State and some indirectly to the Government. We have the retention of this Nitrate Plant No. 2, available throughout the leasehold interest for the very purpose for which it was constructed, the manufacture of nitrate for war purposes.

Mr. WORTHINGTON. Yes.

Mr. MILLER. We have, second, in times of peace, the availability of that enterprise for the manufacture of commercial fertilizers, another one of the purposes for which the plant was constructed. Therefore, we have complied with the legislative intent in those two particulars fully. We have following that a large surplus of hydroelectric energy for distribution throughout the South generally, or at least throughout that zone of the South surrounding Muscle Shoals, which we are told is impregnated with large mineral deposits, and only awaits the hand of man and economical power. We have another element, the navigation of the Tennessee River, which is clearly distinct from the province of our committee to inquire into, that coming before another committee of the Congress. We have, then, by the installation of large commercial enterprises in the South, the upbuilding of that community which will be reflected throughout every corner of it, and a Nation to be great must be great in all of its parts, leading thereby to increased taxable wealth of your State and the surrounding States where this enterprise will be reflected; but one of the obstacles to my mind is how the Government is coming out on this financially, and, in the second place, we are doing something in disposing of this property that Congress never intended we should do, because it was the congressional intent that that property should remain an abiding part of our

national preparedness from the nitrate point of view. Now, we may be getting indirectly all that we would accomplish by directly holding the plant, and that may be overcome in some measure by the better manipulation of the plant and by putting it to more useful purposes in times of peace, which this enterprise contemplates.

Mr. WORTHINGTON. I would like to be permitted to add this much to what you have said, and that is, that one of the most valuable considerations about the Ford offer, unless you can get a better one, is that that plant will keep pace with the art. not only of air-nitrogen fixation but it will keep pace with the whole field of opportunity to improve agriculture through electrochemistry.

Mr. MILLER. Now, you have opened up a suggestion there that I want to ask you a question about. It matters not to your people or to your concern; that is, the Tennessee River Improvement Association, or whatever its name is, whose money goes into this thing, whether it is Mr. Ford's or anybodys else, so long as you get results.

Mr. WORTHINGTON. Oh, but that is true in one sense, and then there is another sense, if you please, that I can not agree with you. We are interested, and in this way: As far as we know there is nobody that has the intention and the money at the same time to do what Mr. Ford says he will do. Nobody has ever suggested to the Tennessee River Improvement Association, as far as I am advised, that he intends, if he can get there, to make aluminum and other light metals, electric steel, perhaps, and other various things that take immense capital; and more important than all that to the Tennessee River Improvement Association, nobody has ever intimated that with his own money and at his own expense he would build dams on the upper Tennessee and its tributaries. So, please, let us draw a very marked distinction between Mr. Ford and his money and intentions and other possible interested parties.

Mr. MILLER. Now, Mr. Worthington, just a moment on that line. Here is the document and this is all we have of record as to Mr. Ford's intentions.

Mr. WORTHINGTON. That is true.

Mr. MILLER. His only intentions are marked in this document.

Mr. WORTHINGTON. That is true, but could not——

Mr. MILLER (interposing). Anything else we have is a matter of pure speculation.

Mr. WORTHINGTON. Well, Mr. Miller, could I not put it in this way. You will grant. will you not, that the large volume of secondary power ought to be converted into primary power, if possible?

Mr. MILLER. It will be if there are enough dams built on the Tennessee River.

Mr. WORTHINGTON. Yes; or some other river.

Mr. MILLER. It would all be primary.

Mr. WORTHINGTON. It ought to be but there is a little more than the mere letter of the agreement that you could draw conclusions from.

Mr. MILLER. We do not want to let our enthusiasm get the better of us here, Mr. Worthington, because the beautiful picture that has been drawn may be dimmed somewhat.

Mr. WORTHINGTON. You do not alarm me by that suggestion.

Mr. MILLER. Up to the present hour, how many dams are there on the Tennessee River between Chattanooga and its mouth?

Mr. WORTHINGTON. Only one.

Mr. MILLER. In all the centuries that have gone by, there has been built only one dam, and how much does that generate?

Mr. WORTHINGTON. The installation is 54,000 horsepower and the lowest minimum in the driest season, I believe, is 14,000.

Mr. MILLER. It has been my real observation here and my caution not to get too rosy a picture of this thing because the power that Mr. Ford or Mr. Ford's company is going to turn out at this point can not be disposed of under such terms as Mr. Ford wants it to be disposed of.

Mr. WORTHINGTON. No.

Mr. MILLER. It will be controlled by your public utility commission of Alabama.

Mr. WORTHINGTON. That is absolutely so.

Mr. MILLER. And from that angle it is entirely impersonal whether the dam is under Mr. Ford's company or under the John Doe company.

Mr. WORTHINGTON. That is true.

Mr. MILLER. You are interested in the generation of that power and its availability for industrial purposes, but the price at which it is to be sold to the consumer is controlled by your commission down there.

Mr. WORTHINGTON. Yes.

Mr. MILLER. If this enterprise should terminate in a glowing financial success there would probably be other like establishments on the Tennessee River in the nature of hydroelectric plants until your entire river would be developed, and it is not beyond reason to picture that some day, but up to this good hour there has been only one plant that has gone in there out of all this glowing territory with all these beautiful prospects, and we have behind us the good old admonition that man has overlooked it all and probably he is the only one who is vile. But Mr. Ford will have this advantage, the Government is financing him at 4 per cent and he is amortizing the plant, compounded against the Government. Now, I use that expression "against the Government," because the definintion of an amortizing fund is to pay a debt to the Government and that project owes the Government so much money and it can only be paid out of this amortization fund by compounding it against the Government and Mr. Ford getting the benefit of the compounding.

Mr. WORTHINGTON. I was just hoping you would make it a little clearer there as to Mr. Ford's advantage—the advantage you say he gets.

Mr. MILLER. He gets his amortization fund running at compound interest, and it would have to in order to yield enough to amortize the plant.

Mr. WORTHINGTON. Yes; but as far as that is concerned, if you wanted to, you could have a sinking fund set up on any Government venture, and that is right where this proposition comes to the forefront as entirely different. If you were to put the Panama Canal on the basis of Mr. Ford's offer it would fall short by $20,000,000 a year plus. Suppose you had put the Reclamation Service on the same basis, it would fall short some $6,000,000, and if you had charged on the Ohio—and do not understand that I am knocking the Ohio at all, because that is not the proposition, because I could take any other river. We can take the Missouri, if you want to; but, taking the Ohio River, if you had charged 1 per cent since 1827 you would have "busted" the Government. That is what would have happened and that is right where the difference comes in here. As to the 4 per cent, which is admittedly lower than you can place water-power bonds, I want to tell you that Mr. Ford, I think, will be heard from. I think the country will hear from him further on the subject of the burden to the industries of this country on account of high rates of interest for power developments. Now, it is not an advantage that he gets by the Government financing this project or lending its credit at 4 per cent, as you stated, because the consumer gets it. The consumer gets it; and, if it was possible—and I hope to interest you in this subject wholly apart from this hearing, if you will allow me to—if it was possible to have these powers developed, say, in your own State and in other States at 2 per cent, we could pay high wages and beat any country in the world in the cost of production and in the markets of the world.

Mr. MILLER. I notice you made an observation regarding the Panama Canal. Of course, we want to keep clearly in our minds the fact that the Panama Canal was built for strategic reasons and never as a commercial enterprise.

Mr. WORTHINGTON. Yes.

Mr. MILLER. It was never built with the view of making it self-sustaining. The lesson that America learned with reference to building the Panama Canal was the voyage of the old ironclad *Oregon* around Cape Horn in order to get to the seat of war, and from that good hour America became busy in securing some means of getting her battleships to possible seats of war other than by going around Cape Horn, and the Panama Canal was the solution of that problem and it was built, and it is there for that purpose now, and the commercial use of it is merely incidental. The same thing is true, exactly, with reference to the building of this Nitrate Plant No. 2. Its primary purpose was for war, and its secondary purpose, like the Panama Canal, was for peace and for the pursuit of peace, and to my mind it is just as dangerous to part with the title of that one enterprise as it is to part with the title to the Panama Canal. As I have said, the only argument against that is that we are perhaps getting through this leasehold interest and through its various provisions the same amount of protection that we would get if we held the title to it.

Mr. WORTHINGTON. Would you not think it good business if you could sell these battle cruisers and battleships to somebody who would keep them up and run them and let you have them any time you wanted them?

Mr. MILLER. No, sir; I would not. My colleagues might not agree with me, but I would never sell a battleship to anybody else and let them run it.

Mr. WORTHINGTON. Then I will put it in another way: Would you not be willing to sell these ships in your Shipping Board and have somebody run them and let you have them back when you wanted them?

Mr. MILLER. Well, now, we are getting into another field. For my part, that has so many angles that I am afraid we would get clear afield.

Mr. WORTHINGTON. I agree with you.

Mr. CROWTHER. Mr. Worthington, this morning you seemed to take some little pleasure, as other witnesses do, in castigating Congress and chastising Congress for their inaptitude in grasping the importance of many of these questions. I do not mean this present committee, but Congress as a whole. I realize that the favorite outdoor and indoor sport in this country is to pound Congress for their various lack of capabilities.

Mr. WORTHINGTON. I did not quite put it that way, Congressman.

Mr. CROWTHER. No; but I simply wanted to say that in order for a man to represent his constituency and come down here and be on a committee and attend all these hearings he would have to know more than there is in the Encyclopedia Britannica and be informed about everything in the world. Some of the questions asked by members of the committee, no doubt, expose their ignorance.

Mr. WORTHINGTON. Oh, no.

Mr. CROWTHER. I am speaking of myself entirely; and they seem to convey the idea to many of the witnesses that we are hostile as a body to every proposition that is before us.

Mr. WORTHINGTON. No; I did not mean to convey that.

Mr. CROWTHER. It seemed to me you did this morning.

Mr. WORTHINGTON. I want to be understood as not meaning that. I poorly expressed, perhaps, what I did mean. What I meant to say was that, since a Member of Congress is not a trained engineer, it is difficult for the engineer to get contact with him. That is what I meant.

Mr. CROWTHER. To get it into his head, you mean.

Mr. WORTHINGTON. Well, I do not mean that either. I certainly did not mean to attack or question the intelligence of Congress. Many people are highly intelligent on one subject and at the same time on another subject it is impossible to get connection with them. I think you will agree to that, will you not?

Mr. CROWTHER. Very often a question is asked by a member of the committee and is answered and that conveys the idea through the press immediately that he is or is not violently opposed to a particular measure, and those things develop. I want to ask you one or two questions, not from a legal standpoint, because like Mr. Greene, of the committee, I am not a lawyer. All the rest of the members of the committee, I believe, are lawyers, and there has been some suggestion that lawyers make poor legislators because they are vastly more concerned about the establishment of precedents than they are about actual accomplishments. I do not know that that is so, and I make that statement with all due deference to the members of that profession. What I think would be of interest and would be a necessity for this committee in order to present the matter to the members of the House and to the country at large would be, as suggested by Mr. James this morning, an actual statement as to the amount of fertilizer that is to be produced, because in this quasi legal document, incidentally, there is one paragraph which to my mind is demagogic and did not belong in the agreement, and this section 15, as I understand it, was adopted at the suggestion of agricultural and farm bureaus and several other societies who wrote that section the way it was put in here.

Mr. WORTHINGTON. No; I must correct that impression altogether.

Mr. CROWTHER. I am glad you are going to correct that, because that statement has been made.

Mr. WORTHINGTON. They did not do anything of the sort, and anyone who intimated that they did was doing an injustice to Mr. Ford and those who were associated with drafting his offer. I will say, though, that when this paper came to the point of actually getting on the road to this committee the farmers were consulted about the language, and there was nothing wrong in that, was there?

Mr. CROWTHER. Nothing wrong, particularly, except I do not see the need for using that language. Why could you not say, as is stated in one other line, "in order that commercial fertilizer," but instead of that it says, "in order that the farmers may be supplied with fertilizer at fair prices and without excessive profits, the company agrees," etc. It keeps referring to the close

relationship between this project and the advantages to the farmer that are to accrue.

Mr. WORTHINGTON. I wanted to get the opportunity to say that the language employed was so employed in order to carry the thought to you that the fertilizer was to get to the farmer as directly as possible.

Mr. CROWTHER. That is exactly what I have wanted to find out and what I have asked about several times, and I do not believe as yet we have had a definite answer about it. I think Mr. Miller commenced earlier in the investigation to inquire as to whether or not Mr. Ford was to carry through the process from the production of the component parts, ammonium nitrate, etc., to the finished product of fertilizer, which he was to deliver to the farmer and which, as Mr. Quin said, they expected Uncle Henry to deliver to them just the same as he did their Ford cars.

Mr. WORTHINGTON. I do not think there is any doubt about that.

Mr. CROWTHER. Do you think there would be any objection on Mr. Ford's part to stating and having in the contract about what they think might be produced, deliverable to the farmers, in minimum tons, commensurate with the production?

Mr. WORTHINGTON. I do not think so.

Mr. CROWTHER. You spoke of phosphoric acid this morning. Of course, that is a component part of fertilizer?

Mr. WORTHINGTON. Yes.

Mr. CROWTHER. And that would be covered by the language in the section with reference to the production of nitrogen and other fertilizer compounds?

Mr. WORTHINGTON. Yes.

Mr. CROWTHER. That would cover that part of it very well.

Mr. WORTHINGTON. With regard to phosphoric acid produced by electric-furnace methods, and I think that phosphoric acid produced by electric-furnace methods is leading the fixation of the nitrogen of the atmosphere, and I am going to suggest that instead of my going into that field, that, as I understand it, Mr. Swann is coming here, and to undertake to describe it would be a duplication, because he will be so much more intelligent and interesting than I can possibly be and more instructive.

Mr. CROWTHER. Who is Mr. Swann?

Mr. WORTHINGTON. Mr. Swann is president of the Federal Phosphorus Co.

The CHAIRMAN. I have invited him to appear after Mr. Worthington is through.

Mr. CROWTHER. In answer to Mr. Miller, you spoke of the probability of developing not only this nitrate industry but things that would develop the whole agricultural industry or tend to their development. Just exacly what did you have in mind by that? One of our witnesses called attention to the fact the other day, and I think Mr. Mayo acquiesced in the statement, that it was quite possible that great plants would be constructed there for the manufacture of all sorts of farming implements and that implements of every conceivable kind might be produced there, and in addition to that, the No. 1 nitrate plant, which was constructed to produce ammonium nitrate by the Haber process, being a failure, was going to be used as an automobile plant. Now, of course, while it may be difficult and Mr. Ford may think it is not necessary for him to put in this contract what he has a vision of as regards future production, still I think this committee and the people of the country would like to know what the present prospects before them are with regard to fertilizer production.

Mr. WORTHINGTON. Well, Mr. Ford has said in my presence more than once, and so has Mr. Mayo, in our discussions of the subject, that it was entirely possible that the fertilizer end of this development would be the major end.

Mr. CROWTHER. That that would be the major end of this entire proposition?

Mr. WORTHINGTON. Yes, sir.

Mr. CROWTHER. When he went down there that was one of the things that was farthest from his mind, was it not?

Mr. WORTHINGTON. Let me impress you with the fact that at that time Mr. Ford had never looked into this question of producing soil food by electric-furnace methods and by using cheap water power, and did not believe in the game at all. He twitted me rather unmercifully about this whole proposition, but when he got deeper into it and the facts were laid before him he seized it.

Mr. CROWTHER. You have testified also during the course of your testimony or suggested that in connection with the tremendous explosion which caused such a terrific loss of life abroad, that that proposition would probably not

be considered—that is, the development of the air-reduction plant, using the Haber process.

Mr. WORTHINGTON. The modified Haber process for nitrate plant No. 1, as designed; no, sir. That is a plain business proposition. It has never been worked out, and my information is, from those who are vastly better informed than I am, that it is not suited to this country at all. We have not yet attained technical perfection for any such plant. Germany has, and Germany has paid the sad lesson for using the Haber process. Whatever did happen that caused the explosion I do not pretend to say, but the explosion happened at the Haber plant.

Mr. CROWTHER. It was testified before the committee that there was an investigation being made to find out what the cause was.

Mr. WORTHINGTON. I believe there is an investigation going on at this time.

Mr. CROWTHER. It has been testified here that ammonium nitrate itself is not especially explosive. It can be detonated, but not easily.

Mr. WORTHINGTON. That is true.

Mr. CROWTHER. You spoke about Mr. Ford having this vision before him, of reducing the price of hydroelectric power for manufacturing purposes, and you pictured the tremendous burden industry was carrying because of those high prices.

Mr. WORTHINGTON. Yes.

Mr. CROWTHER. Do you know whether or not he intends to establish, from this 1,000,000 horsepower, new rates, and intends to let the people have the power cheaper than has been customary, or will he be prohibited from doing that by the State laws and the public utilities commission? Will he thus be prohibited from disseminating power at a lesser rate than is being charged? Has he any philanthropic vision as regards very much cheaper power and carrying through this cheap horsepower?

Mr. WORTHINGTON. Yes; I think he has.

Mr. CROWTHER. So that the people will be able to light their houses and apply the power to their other needs?

Mr. WORTHINGTON. Yes; what he wishes to get at is this: He wishes to take the interest burden off of power, and he thinks there ought to be a policy established in this country to do that.

Mr. CROWTHER. He is making a good start, paying only 4 per cent and compounding the interest.

Mr. WORTHINGTON. He will, I think, establish other enterprises on the Tennessee River on his own account.

Mr. CROWTHER. You spoke this morning of the applications that were made under the Federal water power act. I have a copy of the magazine published here in Washington, within the last week, which published the entire list as of January 1, 1922, and I notice that those applications cover practically every site in the United States.

Mr. WORTHINGTON. That is a fact.

Mr. CROWTHER. I noticed very few of them had an approximate amount of horsepower that would be developed to a very large extent, and two of them—one with 54,000 horsepower and one with 60,000 horsepower—had a great deal more than any one project in Germany. I also noticed that although the aggregate made a total horsepower which was astonishing, yet only a very small proportion of them were acted on, about 30 altogether, I believe. How long are those applications good for? How long can they keep those applications in effect or hold them?

Mr. WORTHINGTON. You mean how long does the application hold?

Mr. CROWTHER. Yes: is there no limit?

Mr. WORTHINGTON. Would you let me put an answer to that in the record? I do not recall exactly, but I will answer it as definitely as possible in the record. I do not exactly remember that at the moment.

Mr. CROWTHER. I will be glad to have you do that.

Mr. WORTHINGTON. I will put a more detailed answer to that in the record.

NOTE.—The Federal water power act approved June 10, 1920 (Public, No. 280), contains the following:

"SEC. 5. That each preliminary permit issued under this act shall be for the sole purpose of maintaining priority of application for a license under the terms of this act for such period or periods not exceeding a total of three years, as in the discretion of the commission may be necessary for making examinations and surveys, for preparing maps, plans, specifications, and estimates, and for making financial arrangements. Each such permit shall set forth the conditions under which priority shall be maintained and a license issued. Such permits shall not be transferable, and may be canceled by order of the commission upon failure of permittees to comply with the conditions thereof."

Mr. CROWTHER. I notice that the corporations existed in the big cities, some of them far distant from the point for which the application was made, until they had a territory on the 1st of January which pretty well covered the entire United States, wherever there was available water power.

Mr. WORTHINGTON. That is true.

Mr. PARKER. I think Mr. Crowther asked you a question awhile ago that you did not answer: That is, whether Mr. Ford would agree to make a finished fertilizer to the minimum quantity put in the contract; that is, whether he would agree to make a minimum quantity of the finished fertilizer?

Mr. WORTHINGTON. I think if the honorable Member would look at section 14 he will agree that Mr. Ford binds himself to produce the approximate annual capacity of the present plant, and that can be stated at 110,000 tons of ammonium nitrate and the equivalent thereof. That is the minimum.

Mr. PARKER. That is the minimum of the components of fertilizer. The quesiton is whether he will make finished fertilizer that would include or be equivalent to that amount of nitrate.

Mr. WORTHINGTON. It would be very difficult to do that. Without speaking for Mr. Ford or Mr. Mayo, and undertaking to give my own opinion, if it would add anything to it at all——

Mr. PARKER (interposing). You have no authority to speak for Mr. Ford?

Mr. WORTHINGTON. Not to agree to that. I would say possibly it could not be done, but I do not believe anybody knows. The field is so promising that I think you will decide to hear some other witnesses in connection with that. My opinion is it will go into a very large tonnage of completed fertilizer.

Mr. HILL. Mr. Worthington, you said that all this Muscle Shoals proposition could be narrowed down to one thing—capital.

Mr. WORTHINGTON. That is right.

Mr. HILL. As I understand it, Mr. Ford contemplates putting a very large sum of money into the development of this property if he receives it under this contract?

Mr. WORTHINGTON. He necessarily will have to do that.

Mr. HILL. Have you ever received any idea from him as to approximately how much money he would expect to put into it, outside of the money he pays to the Government?

Mr. WORTHINGTON. I do not think I have ever heard Mr. Ford say definitely how much it would be. I venture the assertion that he does not know. But I have gotten this measure in talking to him and to Mr. Mayo, that necessarily ten or fifteen million dollars would have to go in, and rapidly, if he puts this power to work, and he would have to go at it rapidly. I get the impression that it would finally run to forty or fifty million dollars.

Mr. HILL. Then, it is your impression that Mr. Ford's plans would contemplate——

Mr. WORTHINGTON (interposing). How much more than that I can not say, and that is a conclusion that I have drawn from my association with them. I expect I am straining the proprieties to say what I think about it, but I want to talk to you as frankly as possible.

Mr. HILL. I do not want to ask you any improper questions.

Mr. WORTHINGTON. I know you do not.

Mr. HILL. As I understand it, from your conversations with Mr. Ford, you think he might put in as much as forty or forty-five million dollars on this project?

Mr. WORTHINGTON. I do not see how he is going to use this power unless he does do it.

Mr. HILL. That is precisely what I have in mind.

Mr. WORTHINGTON. He has to do it; there is no market for it; he can not sell it.

Mr. HILL. In other words, it is your view that in order to utilize this project, which I understood you to say was, mainly, in the beginning at least, a power project, that Mr. Ford would have to put into it, in your opinion, $40,000,000.

Are you able, without disclosing any confidence, or with propriety, to give the committee an outline of about what that $40,000,000 would be expended for in this plant. We are all very anxious to know the details of this proposition.

Mr. WORTHINGTON. You are no more so than I am.

Mr. HILL. We have a responsibility that perhaps you do not have; we have to vote on this proposition.

Mr. WORTHINGTON. I am mindful of that, and I wish I could say something on that line that would be so reliable as to be worth something to the committee. All I can tell you is that Mr. Ford, in speaking to his staff, or some of them, when they wondered how it would be loaded, said he would load it. That is all I know, and I believe he will do it.

Mr. HILL. I am not in any way questioning your confidence in Mr. Ford. The question with us here is to know exactly what the proposition is that we are going to refer to the House. As I understand you, you gathered from Mr. Ford that he expected to spend about $40,000,000. Do you not think we ought to ask Mr. Ford to come before this committee and tell us what his project is, because Mr. Mayo is not at all sure how much he proposes to spend, and so far no one else has been able to tell us.

Mr. WORTHINGTON. I want to be very frank with you.

Mr. HILL. You have been, and that is what we expect.

Mr. WORTHINGTON. I do not think it will accomplish anything to ask him to come. I do not think he could absolutely satisfy this committee if he did come.

Mr. HILL. Is that a reflection on the intelligence of the committee, or on the inability of Mr. Ford.

Mr. WORTHINGTON. No, sir, neither; I am thinking about the difficulty of anybody answering what you ask. But I would like to suggest a remedy for that situation; that you have this assurance; that whether he loads this power or finds consumers for it, he has to pay you 4 per cent on the cost, beginning at the end of four and three years, I believe.

Mr. HILL. As it will cost the Government about 4½ or 4¾ per cent to get the money on which he will pay 4 per cent, that argument does not appeal to me very much. What I would like to find out—and apparently my question is a very difficult one to answer—is this: You said you got from Mr. Ford, or from your conversation with him—and you have testified that you have been associated with him for about eight months in this matter—you stated he had led you to believe he expected to spend about $40,000,000 ultimately in this matter.

Mr. WORTHINGTON. Let me put it in this way, that I concluded that he would have to do so from what he said he was going to do.

Mr. HILL. Precisely; and I want you to tell the committee what things he told you on which you concluded he would put in $40,000,000. If I tell you I am going to buy a Ford truck and a Ford tractor and a Ford car, you conclude that I will spend about $1,200. As I understood you, you told me that Mr. Ford told you he would put in about $40,000,000.

Mr. WORTHINGTON. No; I did not say that.

Mr. HILL. You said you concluded he would spend about that amount.

Mr. WORTHINGTON. That is somewhat different.

Mr. HILL. Will you tell the committee what statement Mr. Ford made to you which led you to conclude he was going to put $40,000,000 into this business?

Mr. WORTHINGTON. I think I stated that, but let me see if I can get it before you again. With a rather imperfect knowledge of how much it takes to finance, say, an aluminum development, I concluded that when Mr. Ford said he was going to try to make aluminum, and possibly some of its alloys, and having had some association in the past with a nitrogen-fixation interest, and having had the opportunity to see estimates that were made on operations that might be carried on at Muscle Shoals if this power were developed, altogether, in summing up my associations and experience, I thought he could not get out for less than forty or fifty million dollars. That is just as clearly as I can state it.

May I supplement that with the information I got from past associations that run over several years, and I think it would be relatively accurate, but I can not do it now? If you will give me the opportunity, we can bring to you some estimates that were made to this very committee.

Mr. HILL. Stated to this committee?

Mr. WORTHINGTON. I do not mean this committee in this Congress, but stated to the Military Committee and to the Agricultural Committee in a previous Congress. I do not know whether such suggestions by one in my position are appropriate, but I think I could bring you some information that would clarify the case you are now inquiring about.

Mr. HILL. In my opinion, any witness who appears before a committee of Congress to give information to the committee is doing a very great public service, and we want to hear everything we can hear which would have any bearing on this very important problem.

What I have been trying to find out by my questions to you is the amount of money Mr. Ford proposes to spend on this project which is now before us for consideration. As I recall it, the highest amount that Mr. Mayo was willing to say definitely that Mr. Ford contemplated expending was about $5,000,000. I say that subject to correction. You said it was about that amount, did you not, Mr. Mayo?

Mr. MAYO. That is not correct.

Mr. HILL. How much did you say Mr. Ford contemplated putting into this plant outside of what he would pay the Government?

Mr. MAYO. If I remember correctly, I said I thought it would take about $5,000,000 in addition to operate the nitrate plant, and the total amount would probably run not less than $25,000,000 or $30,000,000, or even in excess of that. It has always been my opinion that he would probably have to spend eventually approximately $50,000,000.

Mr. HILL. Could you file in the record an estimate or a statement of what the $50,000,000 would be spent for, in a general way, without betraying any confidence?

Mr. MAYO. I do not think I would want to disclose that. I might add that when we built what we call the Rouge plant at Detroit we finished the project which cost us nearly $50,000,000, and the balance of the work to go along with this nitrate plant we thought would reach about that amount.

Mr. HILL. Your testimony was there would be about $5,000,000 more needed for nitrate plant No. 2?

Mr. MAYO. Yes, sir.

Mr. HILL. What amount would be necessary for producing fertilizer?

Mr. MAYO. That is a pure conjecture, because if the process is changed it might greatly change the amount.

Mr. HILL. There might be as much as $45,000,000 additional put into the project which Mr. Ford would have a perfect right to use there?

Mr. MAYO. Yes; it is my own personal opinion that that would be the minimum.

Mr. HILL. Now, Mr. Worthington, all these questions are based on your suggestion that this Muscle Shoals proposition can be narrowed down to one thing—capital?

Mr. WORTHINGTON. Yes.

Mr. HILL. Apparently Mr. Ford has in mind putting in about $5,000,000 to make nitrate plant No. 2 available for the production of fertilizer or whatever other necessities may arise in reference to that particular plant. Outside of that, he has projects which are so big and so important to the general public that they have excited a great deal of public interest through the press. So the attitude at the present time of a great many people is that Mr. Ford is offering to do, through this proposition, a thing of very great and very general benefit to the whole American people, especially to the farmers. That impression is quite general. It is one that is gained through the newspapers. Now, it seems that Mr. Ford is proposing to put up perhaps $50,000,000. At the same time he is asking the United States to advance a very large sum of money, the Secretary of War says about $50,000,000. Have you had any talks with Mr. Ford as to the amounts he thinks the Government would have to put up to finish the dams? There has been some uncertainty as to that amount.

Mr. WORTHINGTON. Well, Mr. Ford thought that the work on the dams and the powerhouses, not including the navigation locks, such part as should be charged to navigation, would call for about $30,000,000, or he suggested that amount. That was not very far away from other estimates.

Mr. HILL. Now, we have a range, say, from thirty to fifty million dollars, one being Mr. Ford's estimate and one being the estimate of the Army engineers, for the completion of the project.

Mr. WORTHINGTON. Taking Mr. Ford's estimate at $30,000,000 and leaving out, which he did, the cost of that portion of the work that should be charged at the two dams to navigation, you can not quite draw a parallel, because in the case of the engineers' estimate, of course, they included the locks. I do not know what they are going to cost. We did take the trouble to find out what they possibly could be let at, and that was around $40,000,000. I do not mean that Mr. Ford did; Mr. Mayo and myself and Mr. Waldo and others, in order to remove uncertainty and get away from this troublesome thing of estimates made by various people, made an estimate, and it looked like it was $40,000,000, perhaps, and certainly not over $42,000,000.

Mr. HILL. Then, Mr. Worthington, we have a situation in which the United States would have to advance vast amounts, roughly, from the Treasury, for the purpose of completing this project.

Mr. WORTHINGTON. Yes.

Mr. HILL. Would you mind telling us what, in your opinion, would be the benefits that the Federal Government would receive from its financing this proposition? Shall I say as a preface, that what is bothering me is this: Cheap fertilizer for the farmers is a very desirable thing. It is just as beneficial to the people in the cities as it is to the people in the country; we are inextricably tied up, and it seems to me it is a very false thing to raise a question between the city man and the country man on the matter of fertilizer. It is a question in my mind how far the Federal Government should go in the expenditure of credit for Government activities in trying to create cheap fertilizer.

The second thing is that it is very necessary to have our nitrates for use in time of war, and, of course, that is one of the big elements in this proposition.

Then, the third thing is that it is a very beneficial proposition, concerning which there is no dispute, that we need our water power developed. I know something about the water power situation in Switzerland and what it has done for Switzerland.

It being granted that cheap fertilizer is desirable, that preparedness in nitrates is now very essential and that the development of water power is most highly desirable, I would like your views as a departure in the policy of financing States would get out of what I regard as a departure in the policy of financing a private enterprise. That is the question in the minds of a great many of our colleagues. We have this project before us; so far nobody else has come along with a suggestion as to what should be done with it.

Mr. WORTHINGTON. Let us include navigation in there; will you not agree to that?

Mr. HILL. I would like to ask you about that.

Mr. WORTHINGTON. I would like to get you to include that before my answer is made.

Mr. HILL. I would like you to put in there anything else you would like to put in. The improvement of rivers and harbors is a very legitimate function of the Government. Would you make a statement as to what character of navigation that stream had been subjected to before the dams came in, and include that in your general answer? I know you said there had been certain navigation there.

Mr. WORTHINGTON. I answered Mr. Miller on that phase of it, I think.

Mr. HILL. What I did not understand then was about how serious was the navigation, about how much tonnage a year.

Mr. WORTHINGTON. Practically none, Congressman. Mr. Burton pronounced Muscle Shoals the most horrible example in all the rivers of this country.

Mr. HILL. I may say we have a certain amount of navigation on the Susquehanna River, but it is not very serious navigation, so far as the transportation of products is concerned.

Mr. WORTHINGTON. The serious thing about this was that there was not any. It was a nonnavigable stream; that is the truth about it.

Mr. HILL. Let me put the whole thing in a concrete form. Suppose I should be favorable to this proposition here and support the acceptance of the proposition on the floor of the House, and I go back to my people and they say to me, "What did you vote for this proposition for? What is in it for the American people?" Will you answer that question for me?

Mr. WORTHINGTON. Why not let me go into your district and do it?

Mr. HILL. I may ask you to do it, but I would like to have your answer it for me here.

Mr. WORTHINGTON. That is all right. In answering, of course, I will not answer except on the merits of the case as I see them. I think you are justified first because I think you will admit you are confronted with the necessity to complete Dam No. 2. The Secretary of War so advises you. You may get some one to take that off of your hands. I think you could say to your people that you are also confronted with the very important question of seeing to it that the purposes of that plant are preserved and ready.

Mr. HILL. That is, plant No. 2?

Mr. WORTHINGTON. Yes; in case we ever get into trouble. In the next place, I think you could say that, taking Mr. Ford's accomplishments and giving some credence and belief to what he says he will do, and considering, if you please, that, if successful, you at least can expect that there will be created taxable values from the development of that power corresponding with what you find in North Carolina and California. And then, finally, there is the navigation improvement. I do feel you could say to your constituents that if you can vote appropriations for improving the navigation of the tributaries of the Tennessee River, and rivers like the Ohio and its tributaries, and the Missouri and other rivers, from which you do not get a penny of interest, nor the return of a penny of principal, you surely are justified in supporting this appropriation when we get 4 per cent, or practically 4 per cent on the Government's investment and the return of the principal.

Mr. HULL. That would be (*a*) completion of Dam No. 2; (*b*) the maintenance of nitrate plant No. 2 in stand-by or ready condition; (*c*) the general creation of taxable values which the Federal Government needs; (*d*) improvement of navigation, which has to be compared with the Ohio, the Mississippi and other river projects.

Mr. WORTHINGTON. Yes.

Mr. HULL. In that you have not included the fertilizer output for the farmer. That would be another element.

Mr. WORTHINGTON. I was going to leave that to say that I thought, and I really do think that has greater promise in it as a national contribution than any other phase of the case.

Mr. HILL. That has made a very great public appeal.

Mr. WORTHINGTON. I do not believe the public is going to be disappointed. It is going to take some courage and a lot of money.

Mr. HILL. The question in reference to the fertilizer that I am constantly met with is this question about which Mr. Miller and various other members of the committee have asked you. That is the question, how much actual fertilizer the American farmer is going to get.

Mr. WORTHINGTON. That is as hard to answer, I think, as to have tried to answer the question, if it had been asked, how much basic steel would the country get when the basic steel operations started in this country. You can not answer such a question in tons. I do not think you could answer that question to your entire satisfaction and bring it down to tons of completed fertilizer, not quite, because all of the field has not been covered. It is new; it is inviting. You are going to decide that yourselves before you get through with these hearings.

Mr. HILL. That answer is precisely what I should have expected you to make, and it is in line with what Mr. Mayo said. Nobody knows definitely how much fertilizer could be produced there; it is not possible to say?

Mr. WORTHINGTON. So far as the future, entire possibilities are concerned, you could not do that any more than if one had undertaken to predict how many Ford automobiles Mr. Ford would make if one had predicted it 18 or 20 years ago.

Mr. HILL. Then the maximum is uncertain. Would it be fair to ask that there be put into this contract a definite minimum of the amount of actual fertilizer, under clause 14?

Mr. WORTHINGTON. Would you indulge us to clear that up in answer to Mr. James's request that we put in a clarifying statement, which we have agreed to do? Will you allow that to answer your question?

Mr. HILL. I heard that question and that will cover it.

Mr. WORTHINGTON. We will undertake to do that.

(The statement mentioned will be found on p. 356.)

Mr. HILL. In connection with your expression in reference to the allotment, whether there would be any allotment of a definite amount of horsepower for the use of the fertilizer plant, and the nitrate plant, what would that be in value?

Mr. WORTHINGTON. In that particular case, measuring the production of nitrate plant No. 2 in ammonium nitrate, it would be about 110,000 horsepower.

Mr. HILL. You spoke of its being from 100,000 to 110,000 horsepower.

Mr. WORTHINGTON. Stating the production in terms of ammonium nitrate.

Mr. HILL. Would it be a thing for us to consider here in connection with section 14, concerning which there have been a good many questions—you probably recollect that the Secretary of War testified that he was not clear as to the guaranty for the production of fertilizer, so we have been particularly interested in section 14. Suppose we added to section 14, in the third line

after the words "ammonium nitrate per annum," something to this effect: "And that the company would promise to devote to the said production 100,000 of primary horsepower from dams Nos. 2 or 3, or from the steam plant at Gorgas, or the steam plant at nitrate plant No. 2 throughout the lease period." That is providing that there would be a devotion of a certain amount of horsepower to that production of fertilizer.

Mr. WORTHINGTON. That section absolutely carries that amount of power, that nitrate plant No. 2 is operated to the capacity production of 110,000 tons of ammonium nitrate, or its equivalent.

Mr. HILL. I so understand from you. Would there be any objection to putting that in as an amendment to the provisions of the section, that they devote a minimum of 100,000 horsepower to the production of fertilizer?

Mr. WORTHINGTON. You will, I am sure, appreciate how one in my position is situated right now; that I could not answer whether Mr. Ford would agree to that.

Mr. HILL. Would you mind talking that over with Mr. Ford?

Mr. WORTHINGTON. I will discuss it with Mr. Mayo and we will see what can be done.

Mr. HILL. I am obliged to you for your answers. I personally feel that any one who appears before a committee of Congress has an opportunity to serve the whole public in giving information. I thank you very much.

Mr. FIELDS. Mr. Worthington, following the last question of Mr. Hill, and the request made of you by Mr. James to put into the record a statement showing the amount of completed fertilizer that Mr. Ford proposes to produce annually, is it not a fact that they have made requests of you it is impossible for you to comply with unless they name a formula for fertilizer, upon which to base your calculation?

Mr. WORTHINGTON. In part that is true, but in this statement we will cover that and make it clear just what it does mean.

Mr. FIELDS. I believe you stated this morning that if the amount of ammonium nitrate to be produced at nitrate plant No. 2 was put into fertilizer on the basis of 2–8–2 it would produce 2,000,000 tons of completed fertilizer?

Mr. WORTHINGTON. Yes, sir.

Mr. FIELDS. If it should be mixed upon a different formula it would change the amount of the completed product; if it should be prepared, for instance, upon the formula of 1½–8–2 it would mean 3,000,000 tons; if it should be prepared upon the formula 1–8–2 it would mean 4,000,000 tons. After all, it depends upon the mixture, upon the ingredients of plant food that go into the fertilizer and also the amount of filler which constitutes the larger part of the fertilizer?

Mr. WORTHINGTON. Yes.

Mr. FIELDS. To attempt to bind Mr. Ford at this time to produce a given number of tons of completed fertilizer, we would have to prepare a basis of compound upon which he should produce the plant foods and the filler, which the agricultural interests might want to change from time to time.

Mr. WORTHINGTON. I think that is substantially correct, and if you did that you might foreclose the opportunity for getting the greatest results out of the whole proposition.

Mr. FIELDS. But there is this assurance, however, that if this plant produces 100,000 tons of ammonium sulphate and it goes into the manufacture of fertilizer it will have to carry with it the other ingredients necessary with that ingredient to make the completed fertilizer.

Mr. WORTHINGTON. Yes.

Mr. FIELDS. And the agricultural interests of the country might want to continue to use fertilizer with a heavy filler, as they now use it, or they might want to use the highly concentrated fertilizers, as was described by Dr. Whitney before the committee on yesterday, which can be used with a great deal more economy when the country learns how to use them.

Mr. WORTHINGTON. Yes.

Mr. FIELDS. I believe, Mr. Worthington, you are an engineer, are you not?

Mr. WORTHINGTON. I was educated as a civil engineer.

Mr. FIELDS. As a citizen of Alabama you have been interested for many years in the improvement of the Tennessee River and its tributaries.

Mr. WORTHINGTON. Yes.

Mr. FIELDS. About how many years of study have you given to that?

Mr. WORTHINGTON. I have been tacked on to this Muscle Shoals proposition since 1901. Then in 1912 and 1913 I got interested in the entire river and its tributaries, and that interest has increased from time to time to the present.

Mr. FIELDS. You are probably as familiar with the natural resources of the Tennessee River Valley as any other man. For the information of the committee will you tell us something about the natural resources of the Tennessee River Valley that could be reached by the navigation contemplated by Mr. Ford.

Mr. WORTHINGTON. There is coal; there is some iron, and the upper reaches of the Tennessee carry the largest uncut hardwood supply in all the Southeast. The marble developments in the Knoxville district are well known, and that character of freight particularly ought to enjoy river transportation. In the field of raw materials that would serve the electric furnace industry I do not think many sections in the United States would, upon examination, be found superior to what you will find in the Tennessee Valley.

Mr. FIELDS. Are there many coal deposits there?

Mr. WORTHINGTON. Yes; I mentioned that. But you have copper, zinc, and other minerals. I wonder if you would not be good enough to let me supplement my statement by putting into the record a rather correct statement in regard to this matter?

Mr. FIELDS. I would be very glad to have you do that.

Resources of the Tennessee Valley and immediate vicinity.[1]

	Amount.	Value.
Mineral and metal production, 1918:[2]		
Barytes	94,045 tons	$560,022
Bauxite	18,230 long tons	152,968
Coal	18,347,996 tons	50,986,228
Commercial clay	146,892 tons	551,272
Copper—		
Ore	529,092 tons	(3)
Metal	14,799,680 pounds	2,960,000
Corundum	820 tons	67,461
Crude clay products		193,362
Feldspar	40,020 tons	160,275
Gold	235 ounces	4,866
Gypsum and other salts		[4] 2,451,600
Iron—		
Ore	886,120 tons	3,012,808
Pig	187,527 tons	7,110,983
Lead	3,410,400 pounds	242,139
Marble—		
Building stone	262,913 cubic feet	582,639
Dust and chips	13,995 tons	16,457
Manganese	29,774 tons	654,612
Mica—		
Sheet production	4,706 sheets	460,450
Scrap production	1,046 tons	12,930
Phosphate Rock	419,479 tons	1,917,546
Pyrites	24,285 long tons	198,632
Quartz	31,126 tons	50,000
Sand and gravel	728,027 tons	502,453
Silver	93,620 ounces	93,620
Slate (valuable deposits)	1,000 square feet	50
Talc and soapstone	72,971 tons	114,822
Zinc	42,141,311 pounds	3,834,859
Total		77,893,054
Agricultural production, 1919[5]		469,531,267
Basic manufactures production, 1918:[2]		
Coke	612,271 tons	4,344,382
Brick and tile	38 operators	1,741,866
Lime	139,127 tons	729,884
Portland cement	1,637,623 barrels	2,456,734
Sulphuric acid	318,175 tons	2,069,623
Total		11,342,489
Summary:		
Mineral and metal products		77,893,054
Agricultural products		469,531,267
Basic manufactured products		11,342,489
Total		558,766,810

[1] Area referred to is shown on map prepared by Tennessee River Improvement Association now on exhibit in House caucus room.
[2] From records of U. S. Geological Survey.
[3] Values recovered given below.
[4] Estimated.
[5] Estimated from census returns.

Mr. WORTHINGTON. When I mentioned such things as copper and zinc, please understand they are being produced; I do not mean mere deposits.

Mr. FIELDS. Is there very much of this above Muscle Shoals?

Mr. WORTHINGTON. Nearly all of it. There are some mineral deposits south of Muscle Shoals; some clays that are important.

Mr. FIELDS. Then these minerals to which you referred have no water transportation now?

Mr. WORTHINGTON. There is no outlet for any of the raw or manufactured materials north of Muscle Shoals.

Mr. FIELDS. In answer to some questions propounded to you by the chairman you mentioned having severed your connection with the Alabama Power Co. I do not wish to ask you any questions that would be in any way personal, but from the correspondence of certain gentlemen in that section which has been made a part of the hearings, and from other contentions that have been presented, my curiosity has become a little bit aroused, I must confess. If I am wrong in my conclusions I want to get cleared up in my own mind, but if I am right I think the committee and the country ought to have the benefit of it.

You were first interested as a citizen in the development of the Tennessee River and its tributaries; that was before you became connected with the Alabama Power Co.?

Mr. WORTHINGTON. Pardon me; I did not quite get that, about being personally interested.

Mr. FIELDS. I say you were first interested as a citizen in the development of the Tennessee River?

Mr. WORTHINGTON. Oh, yes.

Mr. FIELDS. That interest on your part resulted in the severance of your relations with that concern. Why was it they were concerned in the development, or preventing the development you people were trying to bring about? Was it because they regarded it as a possible competitor?

Mr. WORTHINGTON. It is fair to say yes, but it was very natural for them to feel that way. I do not think I would say they are to blame for it. They had gone to relatively large expense; there is no question about that, and they had searchfully surveyed Muscle Shoals, and the most complete information on the subject to this day, in the public document you have here, I think, is as much due, or more due, to Mr. Thurlow, the chief engineer of the Alabama Power Co. than to any other engineer.

NOTE.—The document mentioned is House Document 1262, Sixty-fourth Congress, first session. It contains a survey and report on Muscle Shoals considered as a joint navigation water-power project, which was made in 1915–16 at a cost of about $150,000.

Mr. FIELDS. I believe you stated they had acquired property.

Mr. WORTHINGTON. They had. However, the cost of the property they had there was negligible. They spent a lot of money on surveys, and they hoped, I suppose—of course, they hoped—to see the development made and to carry out their plans which they had proposed to the United States, but which I had to decide were hopeless. I had to make my decision on that point; and, on the other hand, they made their decisions in their own interests, and I do not think they are altogether to blame, and I am not going to confess that I was.

Mr. FIELDS. The thing that strikes me in connection with other things that have developed in the hearings is that here is an organization that is laying its plans to get hold of Muscle Shoals, if it can, and I do not blame them for that.

Mr. WORTHINGTON. It has a perfect right to try to get it.

Mr. FIELDS. But if it can not get hold of it, it is apparently trying to so retard its progress that nobody else can get hold of it, and thereby prevent it from becoming a competitor in its line.

Mr. WORTHINGTON. Well; you are carrying me into a field——

Mr. FIELDS (interposing). That was an expression of my own opinion.

Mr. WORTHINGTON. I would be criticizing some good fellows, perhaps, and maybe making a mistake in doing it, and I do not want to do that.

Mr. FIELDS. You will grant me the right to draw my own conclusions.

Mr. WORTHINGTON. Of course.

Mr. FIELDS. I believe the Alabama Power Co. claims to have an option upon a part of this property covered by Mr. Ford's proposition.

Mr. WORTHINGTON. Yes.

Mr. FIELDS. And the Air Nitrate Corporation claims to have an option upon nitrate plant No. 2. What is the connection, Mr. Worthington, if you know, between these companies?

Mr. WORTHINGTON. The American Cyanamid Co. and the Alabama Power Co.?

Mr. FIELDS. The Air Nitrate Corporation really is the American Cyanamid Co.?

Mr. WORTHINGTON. Yes; it is all about one.

Mr. FIELDS. Is there any connection between the American Cyanamid Co. and the Alabama Power Co.?

Mr. WORTHINGTON. I do not know what the intercorporate relations are now. I do not think I would be willing to testify on that point. When I was a director of the American Cyanamid Co. some of the leading controlling stockholders of the Alabama Light & Traction Co. were in the Alabama Power Co.; I do not know whether they are yet or not. I have not been interested enough for a long time to find out.

Mr. FIELDS. It is a fact that they were at one time?

Mr. WORTHINGTON. Yes. At one time Mr. Washburn was president of the Alabama Power Co. and at the same time president of the American Cyanimid Co. Their intercorporate relations were very close.

Mr. FIELDS. What are the activities of the American Cyanimid Co.?

Mr. WORTHINGTON. The operation of a very large air nitrogen fixation plant and the production of cyanimid in Canada at Niagara Falls. The extent of the American Cyanimid Co.'s operations in New Jersey I do not know, except that I think they produce ammonium phosphate, and they have very large phosphate operations in Florida.

Mr. FIELDS. Mr. James Duke is connected with the American Cyanimid Co.?

Mr. WORTHINGTON. Oh, yes; Mr. Duke, I think, controls it, he and his associates control it beyond question; they did at one time.

Mr. FIELDS. And they also control the Air Nitrate Corporation which claims to have an option on nitrate plant No. 2?

Mr. WORTHINGTON. I suppose they do, because that is all one; the Air Nitrate Corporation and the American Cyanimid Co., as far as this proposition was concerned, it seems to me, would be regarded as one.

Mr. FIELDS. You referred this morning to the power development of North Carolina and what it had meant to that State in the increase of revenue, etc. Was that water-power development?

Mr. WORTHINGTON. Oh, yes; it was hydroelectric development, about 400,000 horsepower is being developed in that State.

Mr. FIELDS. How do the possibilities of the Tennessee River and its tributaries compare with the development in North Carolina?

Mr. WORTHINGTON. Do you mean the Muscle Shoals development?

Mr. FIELDS. Yes; Muscle Shoals and those above.

Mr. WORTHINGTON. In answering that question one must ask for a very wide latitude, because the possible water powers on the upper Tennessee and its tributaries have never been surveyed. The tributaries upon which these powers may be possibly found—in which, indeed, many will be found—are regarded as navigable streams, and we have been trying to get the surveys made. I think it is possible some of those powers would be developed if the surveys were to be made, and by surveys I mean detailed surveys, like that at Muscle Shoals. That is what is the matter with the power on these streams, they are not surveyed.

Mr. FIELDS. How does Muscle Shoals, which has been surveyed, compare with the other water powers?

Mr. WORTHINGTON. One comparison would be this: The approximate total hydroelectric development in the Carolinas, Georgia, Alabama, and Tennessee is about 750,000, approximately the same as Muscle Shoals will be, but with more secondary power than is at Muscle Shoals.

NOTE.—The principal completed hydroelectric developments in the States named may be summarized as follows:

	Horsepower.
North Carolina	298,900
South Carolina	140,400
Georgia	129,400
Alabama	92,000
Tennessee	112,700
Total	773,400

Mr. FIELDS. Nitrate plant No. 1 has been referred to by some of the members of the committee. I want to add at this point that an officer of the Ordnance Department stated here the other day it would require about $4,000,000 to equip nitrate plant No. 1 so that it would produce nitrogen as it was first intended to do. I judge that Mr. Ford would not want to put that additional $4,000,000 upon that plant, and that is one of the reasons, possibly, why he may not consider using it for the production of nitrogen.

Mr. WORTHINGTON. For that reason quite largely, and others economic and conclusive.

Mr. FIELDS. There was one question asked here this morning which seemed to me you did not clearly grasp. That was whether this product that would be produced at plant No. 2 could be used for other purposes than the production of fertilizers. Could it be marketed?

Mr. WORTHINGTON. It would be impossible, in such quantity of production.

Mr. FIELDS. Therefore, if Mr. Ford produces 190,000 tons of ammonium sulphate at plant No. 2, annually, in order to find a market for it he must use it in the production of fertilizer and sell it as a fertilizer compound?

Mr. WORTHINGTON. We might illustrate that. Suppose there was a loophole in that agreement by which Mr. Ford might operate nitrate plant No. 2 in the production of nitric acid. Leave its capacity at 180,000 tons annually. It would not do him any good; there is no market for it. That is a basis for producing nitric acid that never happens in this country and perhaps never will, except in time of war, so it would not help him if he had an opportunity. And, further, if he should do that it would be forfeiting the confidence of the country.

Mr. FIELDS. You referred this morning to the relation of the production of power to labor. I do not understand you to claim that it will reduce the earning power of labor, but will increase its power of production.

Mr. WORTHINGTON. That is quite true, and you might carry that this far. Use this example: If you electrify the railroads you would relieve the coal miners of the mining of coal for those railroads and they would have to mine coal for some other consumer, or find some other work. And you would reduce, of course, the number of railway employees. That does not mean at all that you would reduce the per diem of those who did the work, but at the same time, understand, you would get a much cheaper transportation.

Mr. FIELDS. It would not, however, reduce the price of labor, just as farm machinery did not reduce the price of farming.

Mr. WORTHINGTON. Not at all. On the contrary, it would make it possible to pay what might be said to be a higher rate of railway wage and still have much cheaper transportation.

(Thereupon at 4.30 o'clock p. m., the committee adjourned to meet to-morrow, Friday, February 17, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Friday, February 17, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MR. J. W. WORTHINGTON—Resumed.

The CHAIRMAN. Mr. Worthington, Mr. Fields, who finished his questioning last evening, desires to ask you just one more question, and then Mr. Quin will proceed.

Mr. FIELDS. Mr. Worthington, I gathered from the questions propounded by Mr. Miller that he has the impression that if the Government parts with title to Nitrate Plant No. 2 that it violates its policy enunciated in section 124 of the national defense act of 1916. As I understand that section and that act, the object of it was the production of nitrates, primarily for military use, and, as I further understand, the basis of that production is power. In selling Nitrate Plant No. 2, if the Government shall do so, does it part title with the production of power at Muscle Shoals, or is not that a part of Dam No. 2 and Dam No. 3 which remain in the Government in fee?

Mr. WORTHINGTON. Yes; the dams and the power facilities are merely leased, and the offer says that the power will be furnished to produce nitrates. As I understand you, your question refers to wartime needs?

Mr. FIELDS. Yes.

Mr. WORTHINGTON. It protects that very necessity.

Mr. FIELDS. As I understand it, section 124 of the national defense act of 1916 did not refer particularly to the construction or maintenance of any particular power plant, but its object was the production of nitrates, which is also one of the objects in the contemplated contract with Mr. Ford.

Mr. WORTHINGTON. No, sir, Judge; it just referred to nitrates and water power or other power.

Mr. FIELDS. It did not particularly refer to Nitrate Plant No. 2.

Mr. WORTHINGTON It turns out in this case you have both water power and steam power.

Mr. FIELDS. And it further turns out, does it not, that thirteen of the twenty million dollars appropriated in that act has been expended on Dam No. 2?

Mr. WORTHINGTON. About that amount.

Mr. FIELDS. And that no part of it has been expended on Nitrate Plant No. 2.

Mr. WORTHINTON. I understand that you are correct, and that that was testified to by the Ordnance Department.

Mr. FIELDS. Is it not also correct that Nitrate Plant No. 1 is the first plant that was constructed in pursuance of that act and proved a failure in its first operation?

Mr. WORTHINGTON. I am not very clear or positive about where those funds did come from or from what appropriations, but I am just told here that out of this $20,000,000 in section 124 considerable expenditures were made at No. 1.

Mr. FIELDS. Anyhow, Nitrate Plant No. 2 has no direct connection with section 124, whereas Dam No. 2 does, because it was partly constructed from that appropriation.

Mr. WORTHINGTON. I think that is true.

Mr. FIELDS. And the title to that dam still remains in the Government if this lease is consummated?

Mr. WORTHINGTON. Yes.

Mr. QUIN. Mr. Worthington, you are an engineer, are you not?

Mr. WORTHINGTON. I was educated as a civil engineer.

Mr. QUIN. You are a citizen of the State of Alabama?

Mr. WORTHINGTON. Yes.

Mr. QUIN. How long have you been familiar with the Muscle Shoals territory?

Mr. WORTHINGON. Well, I first saw this Muscle Shoals stretch on the Tennessee River in 1900.

Mr. QUIN. Twenty-two years ago.

Mr. WORTHINGTON. Yes.

Mr. QUIN. About what age gentleman are you?

Mr. WORTHINGTON. That is encroaching a little; however, Congressman, I have forgotten how old I am.

Mr. QUIN. You are old enough to be familiar with the river on which these dams are constructed and the surrounding territory?

Mr. WORTHINGTON. Yes, sir; I think I can qualify on that point.

Mr. WRIGHT. Mr. Chairman, if I may be permitted, I ask a question of privilege on behalf of the witness, because he is a bachelor.

Mr. WORTHINGTON. I am obliged to you.

Mr. QUIN. Mr. Worthington, some questions were asked here about the financial part of this thing. The money the Government has expended there in that dam would be a loss unless it was completed, would it not?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. Now, Mr. Miller questioned you about the rate of interest and what the aggregate of that would be for the Government's investment there. Are you familiar with the river and harbor legislation of the United States Government?

Mr. WORTHINGTON. Well, yes; in a general way.

Mr. QUIN. This Government has spent many hundreds of millions from the time it began the improvement of harbors?

Mr. WORTHINGTON. Yes; a little over $700,000,000.

NOTE.—The actual total expenditures made for maintenance and improvement of rivers and harbors from the fiscal year ending June 30, 1896, to that ending June 30, 1920, inclusive, total $703,053,456.35. (Statement compiled by J. H. McGann, clerk of the Committee on Rivers and Harbors, from the annual reports of the Chief of Engineers, in bulletin of National Rivers and Harbors Congress, March, 1921, p. 5.)

Mr. QUIN. All of the chief harbors of the coast of the Atlantic Ocean, the Gulf of Mexico, and the Pacific Ocean have been improved and are being maintained by the Federal Government?

Mr. WORTHINGTON. Undoubtedly.

Mr. QUIN. The river transportation of the United States has been under the appropriations and direct work of the Federal Government through its engineers?

Mr. WORTHINGTON. Yes.

Mr. QUIN. Has this Government ever received one dime in interest on any of those investments?

Mr. WORTHINGTON. Not so far as I know.

Mr. QUIN. The New York Harbor is for the benefit of all the people of the United States?

Mr. WORTHINGTON. Yes.

Mr. QUIN. The products of the farm, the factory, and the mine of the most distant States of this Union may go out of that harbor to the markets of the world?

Mr. WORTHINGTON. Quite true.

Mr. QUIN. And all the imports we receive through that harbor for the advantage of the people of the United States?

Mr. WORTHINGTON. Yes.

Mr. QUIN. And whenever a river is improved it is for the advantage of the whole population, is it not?

Mr. WORTHINGTON. Yes.

Mr. QUIN. When the Roosevelt Dam was constructed, at a cost of about $15,000,000, for the immediate farm territory there, or to irrigate that land, that indirectly was for the benefit of all the people of the United States?

Mr. WORTHINGTON. Yes.

Mr. QUIN. There was never any interest charged by the Government for that dam, was there?

Mr. WORTHINGTON. I do not think so. I do not think any interest is paid on any of the appropriations to carry on your reclamation projects.

Mr. QUIN. Then the completion of Dam No. 2 and the construction of Dam No. 3 will be the same as any other river and harbor improvement, with the exception that this adds an additional increment to the values of the United States and is of material interest to all the people.

Mr. WORTHINGTON. Yes; that is true.

Mr. QUIN. And, as you have stated, it makes navigation certain.

Mr. WORTHINGTON. Very complete.

Mr. QUIN. And it adds about 800,000 horsepower, both primary and secondary combined.

Mr. WORTHINGTON. Well, it will depend upon what the engineers decide upon as a definite installation on Dam No. 3, but I think it is a better statement to say 700,000, or it may be 750,000.

Mr. QUIN. What would it be if the other dams are built up above by Mr. Ford as contemplated?

Mr. WORTHINGTON. If the dams on the upper Tennessee and tributaries should be built, it is a rough guess to say that there is a million horsepower there that could be developed above Chattanooga.

Mr. QUIN. In addition to this 700,000 you spoke of?

Mr. WORTHINGTON. Yes; but let me remind you that the surveys have never been made, and this is a rough guess.

Mr. QUIN. That is what we are driving at. We want this information for the benefit of the gentlemen who are to vote on this question and who are not members of this committee. As a matter of fact, it is improper, from a financial and economic standpoint, to be charging Mr. Ford with the interest that Mr. Miller speaks of on the dam construction in view of the Government's activities in river and harbor construction.

Mr. WORTHINGTON. Well, do you ask me a question?

Mr. QUIN. Yes, sir.

Mr. WORTHINGTON. I can only offer you my own opinion about it. I do not think that because the Government has found it necessary to make large appropriations for the improvement of our harbors and the improvement of the navigation of our interior rivers—I do not think that policy should necessarily apply to a joint navigation-water power development. On the contrary, just expressing my own private opinion, I think a plan or a policy could be set down all over the country whereby these powers could pay a large part, and in some cases all, of the cost of the improvements. That means that the customers for power pay the bill and a local section bears the expense, but it also gets the benefit.

Mr. QUIN. They get the direct benefit.

Mr. WORTHINGTON. Yes.

Mr. QUIN. Mr. Worthington, you are familiar with the time that this dam was started down there?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. It was originated for two purposes, and I was on the committee that helped to do it. One purpose, and the primary purpose, was to establish a nitrate plant for the Government in time of war, and secondarily, for fertilizer for the farmers of this country in time of peace. There is no dispute about that. The whole record shows that to be the case. Now, peace is on. On the 7th day of February, 1921, the House of Representatives, the lower branch of the Congress of the United States, after long debate, by a majority vote of 7 determined not to continue the completion of Dam No. 2, and let me say that on that afternoon I had a bowed head and a sad heart. Now, the Congress by a majority vote, representing the people of the United States, has practically said that this thing is worthless and shall not be completed. Mr. Ford, through you, has presented this proposition to the Congress of the United States, and in this proposition he proposes to have that splendid nitrate plant ready at all times, with a working personnel, to turn over to this Government in case of emergency or in case of war or threatened war; is not that true?

Mr. WORTHINGTON. That is true.

Mr. QUIN. The consideration which he puts up to this Government is that in the completion of Dam No. 2 and the construction of Dam No. 3, he finances by $55,000 a year the expense, practically, of maintaining both those dams for navigation.

Mr. WORTHINGTON. That is right.

Mr. QUIN. Then Mr. Ford has offered to this Government more than the United States Congress voted to give by its vote on the 7th day of February, 1921.

Mr. WORTHINGTON. Yes; that is true.

Mr. QUIN. He is the first and only man that has come forward in this time of dire distress and offered to take care of this great property, so far as this committee is concerned, or the Congress is concerned.

Mr. WORTHINGTON. Yes.

Mr. QUIN. Some gentlemen seem to be far afield on the idea of fertilizer. One gentleman of this committee insisted that the language in here where it says that it shall be for the purpose of making cheap fertilizer for the farmers is demagogic. Is it possible that because Mr. Ford in his proposition to the United States specifies that 110,000 tons of fertilizer and its components shall be distributed to the farmer under this offer is demagogic? Would you construe that to be demagoguery put upon the American Congress?

Mr. WORTHINGTON. Do you ask me the question?

Mr. QUIN. Yes, sir.

Mr. WORTHINGTON. You qualified me as an engineer.

Mr. QUIN. Did you ever farm any?

Mr. WORTHINGTON. Oh, yes; I have farmed.

Mr. QUIN. You were raised in Alabama, were you not?

Mr. WORTHINGTON. Yes, yes; and worked on a farm, too, but, Congressman, you know you did qualify me as an engineer.

Mr. QUIN. That is true, and I believe I can qualify you as a farmer; you look like I do.

Mr. WORTHINGTON. Well, I want to be excused from passing on that point. Of course, anybody that wished to do so could put their own construction on it, but I would rather not do that now.

Mr. QUIN. That is all right. You know some folks always accuse anybody of being a demagogue who says anything for the farmers.

Mr. WORTHINGTON. Yes; I have heard that.

Mr. QUIN. You stated in reply to a question yesterday that the Congress had not understood the water-power situation when it put a limitation on water powers of the United States at 50 years.

Mr. WORTHINGTON. Well, pardon me, Mr. Quin, it was not quite as broad as that. I said that I did not think this 100 years or 50 years proposition had been very clearly understood, and I thought it had been misunderstood.

Mr. QUIN. Well, you are right in part. The Congress of the United States was endeavoring to safeguard the people. You understand the record of congressional activity shows that certain great financial institutions had interlocking directorates, the same gentlemen would be officers and directors in one corporation that was to do the financing and be officers and directors in the thing they were going to finance, and so on, which would cripple legitimate industry. In other words, Congress was endeavoring to prevent them from exploiting the people, and that was the reason for this 50-year limitation. Now, in this instance, with this great proposition wherein 1,700,000 horsepower can be created, it is my judgment that a 50-year limitation is too little, especially when we are dealing with a man like Mr. Ford, who is a tried, tested, and proven friend of the plain people of this country.

Mr. WORTHINGTON. I think any reasonable man would say that there ought to be a longer period of time for a 700,000-horsepower project than 50 years. That is not a matter of legislation or anything of that sort; it is just a plain business proposition. You would want a longer time to develop seven coal mines or eight coal mines of 1,000 tons a day than you would one.

Mr. QUIN. Oh, it is manifest to my mind. The Aluminum Co., above there, you stated, had a perpetual lease or right in that water power.

Mr. WORTHINGTON. Yes; I think under the laws of Tennessee they have a perpetual ownership, but, Mr. Quin, I also made it very clear that I did not see any objection to it.

Mr. QUIN. Well, I do not, either. It depends on who it is that has it. If it is a great power of wealth that starts out to exploit both the Government and the consumers who are using the product of that power, then it might become a dangerous thing, might it not?

Mr. WORTHINGTON. Well, your question opens up a very wide field of discussion, and yet I must insist that the period over which they have their holding, even if perpetual, would have nothing to do with the selling price of their product, any more than the period of the lease of a coal mine would have anything to do with the selling price of the coal. I do not think that the period has anything to do with the subject at all. If you want to get regulation, if that is what you are looking for, you will have to reach it on some other basis than a period, and then, again, it looks to me as if your power law has been built up with a purpose and a plan, almost, of carrying the Government into the power business at the end of 50 years. I think you are going to have a great temptation, and with all the light before us, that is not a good thing, in my opinion.

Mr. QUIN. The railroads of the United States have their charters granted to them to operate?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. Those railroads operate, as a rule, for 100 years?

Mr. WORTHINGTON. I do not know what the usual length of a railroad charter is. I really do not know.

Mr. QUIN. The Government of the United States in the case of a great many of these roads, like the Santa Fe system, for instance, gave every other section of land along the right of way in order to have the railroad put through; did they not?

Mr. WORTHINGTON. There were very large gifts of land by the Government to the transcontinental railroads as well as the assistance of bonds.

Mr. QUIN. All of the railroads up until a few years ago, in fact, had these land grants. There were some 38 roads to my knowledge that had land grants in the United States.

Mr. WORTHINGTON. I think so.

Mr. QUIN. And in my own State they had immense grants.

Mr. WORTHINGTON. Yes.

Mr. QUIN. Figuring on the same basis that Mr. Miller figured about the value of interest, the interest at 4 per cent on the land granted to these railroads would bankrupt all the Governments of the world in 100 years, would it not?

Mr. WORTHINGTON. Well, it would make them pretty poor, I think, myself.

Mr. QUIN. The Government of the United States was after developing the country through which those roads would run, was it not?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. On that question of interest, Mr. Worthington, I notice that Eliot in his valuable work, on page 182, says that if Methuselah at the age of 21 years had loaned $1 at 6 per cent, compounded yearly, at the time of his death, 948 years later, the interest would be 997 sextillions of dollars. That is just on $1.

What would it be if the United States Government had charged 4 per cent on the value of all of these lands granted to these corporations known as railroad companies, or the money spent on river and harbor construction in the United States from the date we began to do that work up until this hour?

Mr. WORTHINGTON. It passes me.

Mr. QUIN. It is nonsense to talk about such a thing as my friend, Mr. Miller, does, when he talks about 4 per cent being too little for this great dam construction down there. That is going into the field of foolishness, is it not, from a governmental standpoint?

Mr. WORTHINGTON. Oh, I could not say that. I am on the defensive.

The CHAIRMAN. The gentleman will try not to be personal.

Mr. QUIN. I did not mean that in a personal way.

The CHAIRMAN. The committee is trying to conduct its hearings for the purpose of getting information and we will not indulge in personalities. We will get along better.

Mr. QUIN. I did not mean, Mr. Chairman, anything of that kind. It is this record I am after. The Members of the House will see from this record what we are driving at, and certain definite conclusions have been reached here from figures. If the Government of the United States pursues that wise and beneficent policy of public improvement and development for the benefit of all the people we will still have to ask the people to put up money for such improvements, will we not?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. Without the hope or expectation of any interest on it.

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. Except pro bono publico.

Mr. WORTHINGTON. Yes.

Mr. QUIN. The transportation question is one of the most serious that confronts our people to-day, is it not?

Mr. WORTHINGTON. Indeed, it is.

Mr. QUIN. The unit of power as well as the wage largely enters into the cost of transportation, does it not?

Mr. WORTHINGTON. Yes, indeed.

Mr. QUIN. There is no power known to man as cheap as water power, is there?

Mr. WORTHINGTON. That is the cheapest.

Mr. QUIN. Whenever a man has an investment that has a wheel to turn, with a whistle to blow, he had better look out to see that his expenses do not outrun his revenues, should he not?

Mr. WORTHINGTON. He had better be watchful.

Mr. QUIN. And as an economical way to turn that wheel there has nothing been found equal to water power, has there?

Mr. WORTHINGTON. No.

Mr. QUIN. In the pioneer days of this country the folks erected little dams across the creeks, put up their water mills to grind their corn and hominy and wheat.

Mr. WORTHINGTON. Yes, sir.

Mr. QUIN. And if they did not do it in that way they had to have a lever pulled by a horse or a mule or seven or eight men, did they not?

Mr. WORTHINGTON. Yes.

Mr. QUIN. They did not have steam engines to do it with in those days. With that almost primeval method of using the water still the people of this country do not yet appreciate what water power is.

Mr. WORTHINGTON. Well, I do not believe they do.

Mr. QUIN. I know that I did not until this project started, and I was raised on hominy and meal ground by one of those old-fashioned water mills. They did not have steam engines then and they called the place Hominy Creek. The agricultural interest of the United States is the basic interest of the country really, is it not?

Mr. WORTHINGTON. Yes; that is at the bottom of everything.

Mr. QUIN. All the people engaged in the manufacturing business and in all other lines of activity in this country depend directly on the man who tills the soil; is not that true?

Mr. WORTHINGTON. That is true.

Mr. QUIN. And those people who are tilling the soil, according to Government statistics, are heavily involved to-day, are they not?

Mr. WORTHINGTON. Undoubtedly.

Mr. QUIN. I understand that a few years ago the census reports or the Government statistics indicated $1,750,000,000 of mortgages on the farms of the United States. To-day the estimates are that there are $8,000,000,000 of farm mortgages in the United States. Something has caused that, has it not?

Mr. WORTHINGTON. That would appear to be so. Yes, something.

Mr. QUIN. Then, if there is any class of people in the United States who need to be helped through governmental agencies it is the farmer or agricultural class, it it not?

Mr. WORTHINGTON. Yes; I think that is so.

Mr. QUIN. How far is it from Muscle Shoals to the Gulf of Mexico?

Mr. WORTHINGTON. About 325 miles, I think, by airline; but I think it is, perhaps, 375 miles by rail. That is a rough estimate.

Mr. QUIN. The State of Alabama has large deposits of iron, has it not?

Mr. WORTHINGTON. Yes.

Mr. QUIN. And coal?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. And all kinds of ore?

Mr. WORTHINGTON. You mean iron ore?

Mr. QUIN. Yes, sir.

Mr. WORTHINGTON. Yes.

Mr. QUIN. And lime?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. They have cement works down there, have they not?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. The State of Tennessee has lime, cement, marble, and quarries of all kinds?

Mr. WORTHINGTON. Yes; and zinc and copper.

Mr. QUIN. And the timber interests are large in all of that territory tributary to the Tennessee River, both in Alabama and in Tennessee?

Mr. WORTHINGTON. Not so much in Alabama, but the upper reaches of the Tennessee River go into the largest uncut section of hardwood timber in all the Southeast.

Mr. QUIN. With the completion of Dam No. 2 and Dam No. 3 by the Government, and Mr. Ford's contemplated dams above there, aside from the development of this marvelous water power, you have water transportation directly from there to the Ohio River?

Mr. WORTHINGTON. To the Ohio and to the Mississippi.

Mr. QUIN. And, then, out of the Ohio into the Mississippi?

Mr. WORTHINGTON. Yes.

Mr. QUIN. And the Mississippi, both north and south, and, then, the tributaries of the Mississippi?

Mr. WORTHINGTON. That is right.

Mr. QUIN. With this work completed as contemplated, all of that raw material in that territory or the manufactured products made from it, can get out on the Tennessee River, go down the Ohio, up and down the Mississippi and its tributaries, into the very heart of the United States, so that the consumers can receive that product at a cheap rate of transportation.

Mr. WORTHINGTON. Oh, yes; that would follow.

Mr. QUIN. And if they wanted to, they could go down the Mississippi and into the Gulf of Mexico and thence to all the markets of the world.

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. Or they could go up the canal and into the Great Lakes through Chicago.

Mr. WORTHINGTON. Yes.

Mr. QUIN. The transportation alone would warrant the Government in the expense of finishing these two dams, would it not?

Mr. WORTHINGTON. I think it would. Of course, it is a large expenditure, a little unusual, to be sure, but if you take what you have done on other rivers and unless you decide you are going to reverse your policy, I would say "yes." Indeed, if you follow the same policy of expenditure on the Tennessee as on the Ohio, undoubtedly that is true; but as you know, there is a difference of opinion on that subject.

Mr. QUIN. And always will be.

Mr. WORTHINGTON. Perhaps so.

Mr. QUIN. As long as men talk. The main feature, aside from navigation, is the great water power that will be developed there.

Mr. WORTHINGTON. That, I think, is the primary industrial consideration.

Mr. QUIN. And that ought to attract the attention of all the people of this country.

Mr. WORTHINGTON. Yes, sir.

Mr. QUIN. The Chief of Engineers of the Government said that it was the finest water-power stream in the United States with the possible exception of the St. Lawrence, which is partly in Canada.

Mr. WORTHINGTON. Well, I can not agree with him entirely about that. I think it is among the very first power streams. Probably in the West they have some superior ones, but it is one of the very first.

Mr. QUIN. The amount of horsepower that will be required to manufacture this fertilizer according to the agreement in this contract would be how much?

Mr. WORTHINGTON. Well, right there, I would like to say that I do not think anyone could possibly tell how much it will take finally, and in order to clear that question up as far as I can to the committee I think it is a case of this sort: Some 18 or 20 years ago aluminum was, in a sense, a rare metal and there was only a very little of it produced, and it was sold at $1 to $1.50 a pound. Aluminum is now quoted at 26 cents and less, perhaps, and here is the direction of the answer to your question, which is the best I can make: There are 400,000 horsepower engaged in producing aluminum in this country. So the thought among many is that if you can cut the cost of aluminum from $1.25 to $1.50 down to 26 cents with water power, why may not you hope to cut the cost of fertilizer, using similar methods? If you did cut the cost of fertilizer in relatively the same way, then it would be hard to answer your question, because it would not be 100,000 horsepower, it would be 1,000,000 that would be needed, and more and more, of course.

Mr. QUIN. That would depend then on the relative increase of fertilizer output or fertilizer products.

Mr. WORTHINGTON. The consumption of fertilizer will be determined in tonnage by the cost of it. If it is cheap, they will use a great deal of it, and just as the curve of cost goes high the curve of consumption goes down.

Mr. QUIN. That is true. Some of my colleagues on the committee can not understand how they can make fertilizer in a concentrated form and get it to the farmer in that form. Prof. Whitney, I think, explained that.

Mr. WORTHINGTON. Well, Mr. Quin, if, perhaps, your comment is true, and I do not pretend to pass upon it, that matter would be cleared up by a gentleman who I understand is to follow me, absolutely, I think, to the satisfaction of the committee.

Mr. QUIN. Prof. Whitney cleared that up.

Mr. WORTHINGTON. Well, I did not hear him.

Mr. QUIN. I would like to put in, through you, an idea for those gentlemen on the floor of the House who have not heard these statements and for some of the members on the committee, perhaps, who can not understand it. You stated that you were reared on a farm. Did you ever see an old-time ash hopper?

Mr. WORTHINGTON. Yes, indeed.

Mr. QUIN. They took hickory and oak wood and put it in a barrel with some shucks at the bottom and poured water in and the lye dripped out.

Mr. WORTHINGTON. That absolutely happened.

Mr. QUIN. They were doing that to get the potash out of the wood for soap-making qualities, were they not?

Mr. WORTHINGTON. In the ash they did get fertilizer and they got nitrogen, too, I think.

Mr. QUIN. Then they took that lye and put it in a pot with some pork rind or waste pork fat and put a fire around it and boiled it to a certain temperature and they had soap, did they not?

Mr. WORTHINGTON. That was the process.

Mr. QUIN. It took the potash and other fertilizer ingredients to get that soap, did it not?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. And they had a barrel standing there that had 300 pounds of ashes in it which contained that soap or potash, and when the good housewife got through with it she had about 10 pounds of soap ready to wash the clothing and scrub the floors of the house.

Mr. WORTHINGTON. Yes.

Mr. QUIN. And, furthermore, you can go into any drug store and buy concentrated lye, can you not?

Mr. WORTHINGTON. Oh, yes.

Mr. QUIN. And without having to have it drip through that hopper of ashes in order to get this lye, they can now get a little can of lye that you can put in your coat pocket and that answers just as well as that whole barrel full of ashes would. Is it not then reasonable to suppose that the fertilizer can come out of the atmosphere through this process at plant No. 1 or plant No. 2 at Muscle Shoals, and have that fertilizer turned out in a concentrated form and save all of this waste of transporting useless materials with the fertilizer that is sent to the farmer?

Mr. WORTHINGTON. Oh, indeed, Mr. Swann will make that very clear to you if he follows me.

Mr. QUIN. There is no doubt about that?

Mr. WORTHINGTON. Oh, no.

Mr. QUIN. The fact is that a man with 10 or 15 acres of land could get enough of that concentrated fertilizer through parcel post to do him, could he not?

Then the question that the Secretary of War raised that Mr. Ford, according to his judgment, could not produce fertilizer or this nitrogen stuff cheap enough, will not hold water.

Mr. WORTHINGTON. Well, that was the opinion of the Secretary, to which I am very respectful, but I do not think he is a fertilizer maker.

Mr. QUIN. Well, I did not think so myself, but he held that if it could be done, he would be willing for this proposition with a 50-year period.

Mr. WORTHINGTON. Well, I think Mr. Swann will show you that it can be done.

Mr. QUIN. Mr. Worthington, they have in that immediate territory phosphate beds, have they not?

Mr. WORTHINGTON. Oh, yes; we have large deposits of phosphate rock in Tennessee.

Mr. QUIN. It will be no trouble to reach that phosphate rock from the Muscle Shoals plant?

Mr. WORTHINGTON. Oh, no.

Mr. QUIN. Do you know of another place in the United States as well situated for the economical manufacture of fertilizer and its compounds and products as the situation you have right there at nitrate plant No. 2?

Mr. WORTHINGTON. Not at all.

Mr. QUIN. Of all the places in the United States——

Mr. WORTHINGTON (interposing). That, I think, is the cheapest in the United States.

Mr. QUIN. All the raw material is right handy there?

Mr. WORTHINGTON. Yes.

Mr. QUIN. And Mr. Ford knows that?

Mr. WORTHINGTON. Yes; I think he is confident of that.

Mr. QUIN. Some gentlemen are afraid that some earthquake or disaster will happen down there. Are you familiar with the history of the Tennessee River?

Mr. WORTHINGTON. Well, part of it for a period.

Mr. MCKENZIE. If you will pardon me, Mr. Quin, I think Mr. Worthington went over all that matter yesterday and it is now in the record, and I do think we ought to hurry along and not have repetition in the hearing.

Mr. QUIN. I want to show that there has not been any earthquake there. Is there any record in sacred or profane history of any earthquake in that territory?

Mr. WORTHINGTON. Mr. Quin, not to my knowledge.

Mr. QUIN. Well, from the time that mother earth trembled and shook herself and left that river standing there, there has not been an earthquake there, has there?

Mr. MCKENZIE. I think you will have to show that the witness was there all the time.

Mr. QUIN. Is it not reasonable to conclude that that same river will be running there, except we intend to harness it up and conserve that water power, from now on until the Angel Gabriel plants one foot upon the sea and the other on the land and blows his bugle on the day of judgment?

Mr. WORTHINGTON. Well, I think Mr. Ford is willing to take the risk in that respect, and the United States has already taken that risk.

Mr. QUIN. And the Government and the taxpayers would be willing to continue taking the risk of an earthquake.

Mr. WORTHINGTON. I could not answer for the taxpayers.

Mr. QUIN. The investment as contemplated by Mr. Ford from your conversations with him include the development of the dams above, and necessarily the employment of a world of labor.

Mr. WORTHINGTON. Oh, yes; there will be a very large number of people employed in connection with this matter, undoubtedly.

Mr. QUIN. The development of this cheap water power with the necessary industries incident to it would make all of that Tennessee River valley hum with industry, would it not?

Mr. WORTHINGTON. Yes; I think it would be quite unusual, perhaps. Of course, if the upper dams are built, it will take time to bring the hum which you mention.

Mr. QUIN. Oh, yes; I do not expect that this will be done in a day, but we are representing the people for the future as well as for the present. It is going to be, when it is completed, a large wealth and tax producer for the United States and the adjoining States.

Mr. WORTHINGTON. There is no doubt about that if the plan works out.

Mr. QUIN. Then, to offset this supposed interest charge on the Government in the construction of those dams, you have a saving in transportation of the products of that territory to the consumer, have you not?

Mr. WORTHINGTON. Very true; and particularly so in the cost of transporting the fertilizer, if the plan works out.

Mr. QUIN. I was just coming to that. You have, aside from the proposed cheapness in price, and it has been stated that Mr. Ford believes he can put it down to the farmers for one-half of what they are paying now, or at any rate, for 33⅓ per cent less——

Mr. WORTHINGTON (interposing). I agree with him about that.

Mr. QUIN. Then, upon the amount of fertilizer consumed in 1920, that is a saving of many millions of dollars to the American people; to the farmers directly and indirectly to the consumers of farm products. Then, aside from that, instead of carrying all this dead waste in the fertilizer, in hauling 2,000 pounds of that fertilizer when only 400 pounds of it is really fertilizer, you will save then in freight rates many millions of dollars during the course of a year or 2 years or 10 years, would you not?

Mr. WORTHINGTON. That ought to follow.

Mr. QUIN. The saving to the people of the United States from the development of this river and water power, as contemplated here by Mr. Ford, would offset all of the interest that the Government might be losing on such an investment, would it not?

Mr. WORTHINGTON. That would appear to be true.

Mr. QUIN. It occurs to me that Congress made a great mistake last February when we voted this down, and I believe that to turn down this Ford proposition would be the crime of the twentieth century, the way I feel about it.

Mr. FISHER. Mr. Worthington, I come from a section where there is a very lively interest in the development of Muscle Shoals. The city of Memphis is the only city of large size within 150 or 200 miles that is without water power. We have industrial need for power. I would like to know whether or not all the power which is to be developed from the Muscle Shoals development will be utilized by Mr. Ford at Muscle Shoals or is there a possibility of, say, a city like Memphis through proper agencies getting some of that water power for the development of its industries.

Mr. WORTHINGTON. Well, I could only give you my opinion. It would be just merely my opinion. You have heard what Mr. Mayo answered, I think, in his testimony on that subject. From what I know of Mr. Ford, I think if Memphis went to him they would get what they wanted in that respect, but that is a matter of opinion. It is quite difficult, if I might take the chance and say it, to settle all these multiplied questions of policy without knowing whether you have got anything to settle them on. It just does occur sometimes that there are so many questions asked that could be answered with assurance and with definiteness, if we had something to answer them on.

Mr. FISHER. You are very familiar with the investigations that have been made about the development of navigation on the Tennessee River. I will ask you whether or not those who have been promoting the development of the Tennessee River have met with any great success in getting appropriations heretofore from the Congress for that development.

Mr. WORTHINGTON. Not to my knowledge.

Mr. FISHER. I will ask you whether or not from your study of the territories which the Tennessee drains, there are great natural resources that would naturally go to river traffic rather than railroad traffic, such as marble, lumber, coal, and iron.

Mr. WORTHINGTON. Undoubtedly.

Mr. FISHER. Do you know of any other or quicker way that the navigation possibilities of the Tennessee River could be developed than by such a scheme as is offered by Mr. Ford?

Mr. WORTHINGTON. It is the only way you can do it. You can develop it on some other scheme, but there will not be much navigation.

Mr. FISHER. Our section of the country, as you know, is sadly in need of fertilization.

Mr. WORTHINGTON. Yes.

Mr. FISHER. From your study of Mr. Ford's outline, do you think the farmers in their belief in the possibilities offered by Mr. Ford have the right to expect and hope that cheap fertilizers can be and will be produced for them?

Mr. WORTHINGTON. I think so.

Mr. WRIGHT. Mr. Worthington, I believe you stated yesterday that you are not a paid employee of Mr. Ford.

Mr. WORTHINGTON. Oh, yes; I stated that yesterday.

Mr. WRIGHT. You are the president of the Tennessee River Improvement Association?

Mr. WORTHINGTON. Oh, no; I am the chairman of the executive committee.

Mr. WRIGHT. Will you tell the committee what the activities of that association are, and what are its objects and purposes.

Mr. WORTHINGTON. The association is quite an old one, perhaps 25 years, and it is an association like the Ohio River Association and in part like the Mississippi Valley Association, engaged in efforts to get the navigation obstructions of the Tennessee removed, but it is a little different in respect to its activities since 1915 or 1913, from some of them, because the association, I may say, put teeth in its work and paid for information, and dug it up and tried to keep it put. That is about the size of it.

Mr. WRIGHT. The point I am getting at is this, Colonel, would the development of this Muscle Shoals property, in accordance with an acceptance of Mr. Ford's proposition, be in line with the efforts and objects of your association.

Mr. WORTHINGTON. Oh, to be sure; that is the object.

Mr. WRIGHT. That will largely explain your connection with it and your activities in connection with it?

Mr. WORTHINGTON. Yes; it was thought we had to go somewhere very soon. There was going to be possibly a long wait, and as I said yesterday it was a question of capital, and we felt that Mr. Ford had it, and it turns out he has it, with which to do this job. It was nothing extraordinary; it seemed to me it was the most natural thing to do.

Mr. WRIGHT. Do you understand it is the purpose of Mr. Ford to give the consumers of fertilizers the benefit of this cheap power.

Mr. WORTHINGTON. Oh, yes. He says how he will do it, and he says he will not get more than 8 per cent profit.

Mr. WRIGHT. With the Gorgas plant contiguous to a coal supply, steam power could be generated there very economically, could it not?

Mr. WORTHINGTON. Yes; it could be generated economically; as far as the coal power could be generated, I think that is so.

Mr. WRIGHT. Then you think water power would be generated as cheaply there as anywhere else?

Mr. WORTHINGTON. I think they could get relatively cheap power.

Mr. WRIGHT. So he would have two sources of cheap power?

Mr. WORTHINGTON. But it is fair to Mr. Ford to say that his mind is not on steam power.

Mr. WRIGHT. That is an adjunct?

Mr. WORTHINGTON. Yes.

Mr. WRIGHT. Do you regard this enterprise as applying to this region alone, or as a national asset?

Mr. WORTHINGTON. I think it is national in its results, if the results expected mature.

Mr. STOLL. Mr. Worthington, if I understand your testimony correctly, is it your opinion that if Mr. Ford gets Muscle Shoals, there are certain definite developments we may expect, namely, the navigation of the Tennessee River, the manufacture of fertilizer, and the development of electric power. He will find that much a certainty?

Mr. WORTHINGTON. I do not think there is any doubt about that.

Mr. STOLL. Also, that there are certain probabilities, namely, that you would manufacture aluminum, and probably electrify certain railroads.

Mr. WORTHINGTON. Electric steel, perhaps.

Mr. STOLL. And third, that there are certain possibilities that are almost beyond the imagination of man?

Mr. WORTHINGTON. Congressman, I think you have stated and defined it perfectly; just as perfectly as you could state it.

Mr. GARRETT. Mr. Worthington, in your whole life did you ever appear before a more inquisitive body than this committee?

Mr. WORTHINGTON. I am still before the body, Congressman.

Mr. GARRETT. The question I want to ask you is, is there in your possession now, after this examination by all these gentlemen on the committee, any information that I could possibly elicit by any question I might think of? Have you told the whole story?

Mr. WORTHINGTON. Congressman, do you not think you are crowding me a little?

Mr. GARRETT. I do not want to rehash anything that has been gone over. I was wondering whether there was anything in your mind you want to say which you had not said.

Mr. WORTHINGTON. In frankness, I think the case is before the committee, and as I have stated before, if you will let Mr. Swann show you what nobody else in this country can better show you, I think you will have this case very well illustrated and well understood.

Of course, there are a great many things that might be said, but I do not see why—there are some very interesting phases of the case that might be discussed, but it would be entirely within the pleasure of this committee to say how long they would care to discuss them.

Mr. GARRETT. Sometimes a witness has something in his mind that has not been fully developed by interrogations and I was wondering if there was anything you would like to say further.

Mr. WORTHINGTON. That gives me an opportunity to say this. You know there was some little colloquy yesterday, quite friendly, I am sure, about what I call contact. My mind goes back to that somewhat, and I would like to say this: We who try to answer you have our difficulties; I am very sure we want to answer you in full, if possible. But there are some of the questions that absolutely must remain for the future; nobody can answer them now. I better understand, since I have been before the committee, your viewpoint, and I better appreciate some of the questions that were asked yesterday. I know very well you are entitled to every bit of information that can be given to you. There is this fact I hope you will, from the human standpoint, remember, that this negotiation has been on now since June 6 last, and I do not want to say to the committee that Mr. Ford is an impatient man—very much the contrary. But put yourself in his place, if you can, a very busy man, with a great many great big things to deal with, and then have to consider negotiations in connection with his offer after all these months. Just please appraise our difficulties in dealing with that kind of a case.

I wish especially to leave with the committee this thought. I think a great many people have been in error all the time. Please remember that Mr. Ford was invited; he did not seek this proposition. And then again, there is just one little thing further and that is this: I think Mr. Ford has shown a patience that is perfectly unusual. His offer came down here to the Secretary of War—do not understand that I am complaining about him at all, or making any statement that is unfriendly—but it is a fact that the Secretary of War gave out Mr. Ford's offer, or the text of it, to the public, and he still invited bids, and I understand the Secretary of War still expects them. Right there is a little case in which it seemed to me the letting out of an offer was not just according to Hoyle.

The CHAIRMAN. So far as this committee is concerned, they only received the letter of the Secretary of War forwarding this proposition to Congress about two weeks ago, and for 10 or 11 days we have been meeting, forenoons and afternoons, so that the committee has certainly not been guilty of delay.

Mr. WORTHINGTON. It must be made plain that I did not at all intimate that this committee has not been persistent in its work. What I am trying to get before the committee is this: When you remember that the news is continually coming out, that there is another offer coming in, and you find a man occasionally getting fretful when these changes are suggested, please remember our difficulties.

Mr. GARRETT. I understood you to say you were the gentleman who carried the proposal from the Government to Mr. Ford?

Mr. WORTHINGTON. Let that be made perfectly clear. The Chief of Engineers was asked to come to Detroit. He could not go, and he said that he would like to have me go, although, of course, he made it perfectly clear he could not give me any official status. I told him no official status was needed.

Mr. GARRETT. So far as Mr. Ford is concerned, as I understand from your testimony, the Government invited him to make a proposal concerning Muscle Shoals?

Mr. WORTHINGTON. He received the same invitations that the others did.

Mr. GARRETT. And he has made that proposition and you have now given the committee all of the information you have in connection with the whole matter, so far as Mr. Ford's viewpoint is concerned; and as far as I am concerned——

Mr. WORTHINGTON (interposing). As far as I possibly could.

Mr. GARRETT. The matter, as far as I am concerned, I think I understand fairly well, and it is reasonably clear to me as a layman, except one proposition, and that is on the question of the amount of fertilizer that is going to be manufactured at this plant for distribution among the farmers. In reading section 14 of the proposal I drew the conclusion before the evidence was offered that what Mr. Ford intended to do, what that section provides that he shall do, is that he will maintain nitrate plant No. 2 for the manufacture of ammonium nitrate, or its equivalent in fertilizer compounds, to the amount of 110,000 tons of ammonium nitrate per year.

Mr. WORTHINGTON. That is true.

Mr. GARRETT. I understood that to mean that when you take that element as a component part of fertilizer, that the total number of tons of finished or concentrated fertilizer would be 110,000 tons of ammonium nitrate converted into nitrogen divided by the amount of nitrogen contained in one ton of the complete fertilizer. I want to know whether I have got that right or not?

Mr. WORTHINGTON. I think you have that just about right.

Mr. GARRETT. If that be true, according to the testimony of other witnesses, going upon the ordinary basis of 2–8–2 fertilizer, it would be equivalent to something like 2,000,000 tons per annum, as a minimum.

Mr. WORTHINGTON. That is right.

Mr. GARRETT. The question of the maximum would depend upon the demand of the country, and of course the amount of fertilizer——

Mr. WORTHINGTON (interposing). I think the maximum would be determined by the cost per ton. If it is low, it will rise right up. And right there—I wish I could get the sympathy of the committee on one point. I thought about your troubles last night and tried to put myself in your place, and I would like to say this: Suppose you put yourself back at Niagara Falls, 10 or 20 years ago, and you were sitting there to determine whether you would furnish capital or not, and you had asked those people what the tonnage of production would be. Gentlemen, they could not have answered you at all, and that is just the case you have before you to-day.

Mr. GARRETT. That was my personal conclusion of the matter, and my construction of the contract was that section 14 was put in there as a notice, so far as the fertilizer feature of it was concerned, that here is a minimum; that we would have that capacity of ammonium nitrate going into the finished product. That would be the minimum. What else it will be, whether it will be 10,000,000 tons 10 years from now we do not pretend to state. But we do start with this minimum gross amount, and we state that it is a minimum. In comparing this with the total amount of fertilizer now produced there have been estimates as to whether this product will reduce the price of fertilizer.

Mr. WORTHINGTON. That is right.

The CHAIRMAN. Mr. Worthington, this matter of the fixation of nitrogen has been before Congress since about 1912, has it not?

Mr. WORTHINGTON. Yes, Mr. Chairman, I think that is right.

The CHAIRMAN. Were you not interested in bringing the matter to the attention of Congress at that time?

Mr. WORTHINGTON. Oh, yes; back in 1912, representing, in part, the Alabama Power Co. and the American Cyanamid Co., I did do my best to get a grant for the Alabama Power Co. to build what was known as Lock No. 18 at the dam on the Coosa River. I suppose that is what you refer to?

The CHAIRMAN. It is.

Mr. WORTHINGTON. That is true; and perhaps as you were a Member of Congress at that time you remember the grant was given, and that Mr. Taft, who was then President, found it necessary to veto it. That was a very sad thing. I do not know but that I am glad you mentioned it. It seems that we made, unluckily, so many mistakes about the fixation of nitrogen in this country that if it is possible we ought not to do it any more.

The CHAIRMAN. We did learn some things from our mistakes.

Mr. WORTHINGTON. Yes; and we ought surely try to get right on this thing at this time, if possible. That failed, Mr. Chairman, as I remember it, only because the Secretary of War at that time demanded that he be given the right to make a charge for the use of the water. Well, that could not be agreed to. The result was the cyanamid plant designed to be built at Montgomery, Ala., went to Canada, and the sad thing about the whole matter is that if the mistake had not been made the Government would have saved during the war, I am sure, not less than $30,000,000, because you would have had an air nitrogen fixation plant, and, if you please, it would have used the very same process you have had at plant No. 2, and you gentlemen know you would have just expanded that. So it seems that we have been quite unlucky in this country on that subject.

I want to call Mr. Miller's attention to the fact that he has more water power in his State, perhaps, than in any State in the Union. I do not know how he feels about it, but as far as Alabama is concerned, I am unalterably opposed to any Secretary of War assessing a tax upon the use of water, I do not care who he is. He is too far away from the water power sites to decide that question; nine times out of ten he would be a lawyer, who does not know much about kilowatts. That is rather voluntary on my part, Mr. Chairman, but I hope it is not impertinent.

The CHAIRMAN. It is very instructive to the committee. I come, as you know, from the State of California, and the interference by Government officials with the development of water power has been more harmful than I would be able to tell in a few minutes.

Mr. WORTHINGTON. I do not think you could.

Mr. HULL. Mr. Worthington, we sometimes lose sight of what I think the committee considers the fundamental object of this entire matter, and that is the fixation of nitrogen for war purposes. This whole thing, fundamentally, is considered as a national defense problem, and nothing else. In the making of this contract with Mr. Ford, was there any question in regard to his being compelled, for the life of the contract, for the 100 years, to maintain plant No. 2 as a plant that would fix nitrogen for use in the manufacture of explosives?

Mr. WORTHINGTON. There is no question about that; he binds himself to keep the plant there, prepared to do that.

Mr. HULL. You refer to the provisions of paragraph (b) in section 14?

Mr. WORTHINGTON. Yes; that is right, Mr. Hull.

Mr. HULL. Maj. Burns, on page 215 of the testimony before the committee, rather doubts whether that is sufficient. Have you any doubt in regard to that?

Mr. WORTHINGTON. I think no one in the world would doubt it. I never heard the question raised before.

Mr. HULL. If there is any doubt about it, Mr. Ford would not be opposed to making it specific, I take it. It is not as specific as it might be; I will admit that; but I think the intent was to be specific. I think we can not reiterate it too many times, and it seems to me it is necessary that it should go into the contract, and that part of the contract must go into the deed; is that not true?

Mr. WORTHINGTON. I am sure you will not find—I do not think I will be mistaken about that—that Mr. Ford would be unwilling to do any reasonable thing. He, however, has shown some hesitation about continuing to make changes. He said this, that some time, somewhere, the negotiations had to come to an end.

Mr. HULL. That is the only point, making specific what he really intended to do.

Mr. WORTHINGTON. If you would kindly confer with Maj. Burns and draw up something that is right, and give it to Mr. Mayo, he will see about it. There is no hesitation or disposition not to try to do it.

Mr. HULL. I have not any doubt as to the intention; the only doubt I have is on this score, that if we do not clear it up now, 30 or 40 or 50 years from now somebody will be going around wondering what we did mean. So it seems to me we ought to make it very clear at this time, because I would not for one minute support this contract if that was not made positively clear.

Mr. WORTHINGTON. I may say that I am sorry Maj. Burns has found it necessary to tell you what you say, because he was, as I recall, present when the final draft was entered upon in the Judge Advocate General's office, and it is unfortunate he did not suggest the difficulty at that time.

Mr. PARKER. Mr. Worthington, you have mentioned the navigation plans on the Tennessee River. I do not think it has been stated what draft of boats is contemplated by those plans and by the locks.

Mr. WORTHINGTON. The improvement of the Tennessee River, Congressman, from Muscle Shoals to the Ohio River, provides for a 6-foot draft, and that is completed, a distance of 259 miles.

Mr. PARKER. Are there any locks?

Mr. WORTHINGTON. One lock.

Mr. PARKER. What is the length and breadth of the lock.

Mr. WORTHINGTON. The lock has a 26-foot lift, with a canal 8 miles behind it.

Mr. PARKER. What is the length of the lock?

Mr. WORTHINGTON. This lock is 80 by 287 feet.

Mr. PARKER. Are the same sort of locks contemplated at other places?

Mr. WORTHINGTON. That is the only one of that type. That is at Colbert Shoals.

Mr. PARKER. Above and at the dams what sized locks are contemplated?

Mr. WORTHINGTON. The only lock is at Hales Bar.

Mr. PARKER. At Dams 2 and 3.

Mr. WORTHINGTON. At Dams 1, 2, and 3 the latest information I have is that they are 60 by 300 feet. There are several lifts.

NOTE.—The report of the Chief of Engineers for 1920 (p. 1326) gives the dimensions of the locks planned at Dam No. 2 as stated above. It is understood, however, that these locks are to be at least as large as any on the Tennessee River, and it is expected that suitably enlarged dimensions will be adopted when construction work is resumed.

Mr. PARKER. I only want to get the draft.

Mr. WORTHINGTON. It is 6 feet, and can be made 9 feet whenever necessary.

Mr. PARKER. What is the draft at Hales Bar?

Mr. WORTHINGTON. Six feet.

Mr. PARKER. So it is a 6-foot draft?

Mr. WORTHINGTON. That is the plan, with a possible rise to 9 feet.

Mr. PARKER. That would provide for a boat of pretty good size?

Mr. WORTHINGTON. Yes; that would be very good.

Mr. MCKENZIE. Mr. Worthington, you are familiar with this subject from its very inception, I take it?

Mr. WORTHINGTON. Yes, sir; that is so, Mr. McKenzie, I guess.

Mr. MCKENZIE. In 1912, when you succeeded in getting the act passed by Congress for the development of Muscle Shoals or on the Tennessee River——

Mr. WORTHINGTON (interposing). On the Coosa River.

Mr. MCKENZIE. There were two interested parties, I assume, at that time?

Mr. WORTHINGTON. There were.

Mr. MCKENZIE. One was the American Cyanamid Co., and the other——

Mr. WORTHINGTON (interposing). The Alabama Power Co.

Mr. MCKENZIE. And at that time, of course, the world was at peace; the European war had not broken out at that time.

Mr. WORTHINGTON. Yes, sir; that is quite true.

Mr. MCKENZIE. And the question of the construction of this particular plant was not predicated upon the manufacture of nitrates for military purposes?

Mr. WORTHINGTON. I think that is true; the military side of it, or the preparedness side, was not pressed at that time.

Mr. MCKENZIE. At that time the agricultural interests of the country were the people who were really interested, outside of the American Cyanamid Co., which expected to manufacture different products, and the Alabama Power Co., which would have taken some of the power.

Mr. WORTHINGTON. Yes.

Mr. MCKENZIE. That law, you said, was vetoed by President Taft?

Mr. WORTHINGTON. But I do not want to say I criticized him, because I got in perfect good humor with him after he talked to me about it.

Mr. MCKENZIE. In 1916 you came back to Congress and, as I remember, being a member of the Committee on Military Affairs at that time, the original proposition was to have this plant constructed at Muscle Shoals.

Mr. WORTHINGTON. Well; we did present to your committee in 1916 the suggestion or plan that you prepare for the national defense of the country in the matter of nitrates, and at that point; that is right.

Mr. MCKENZIE. That is my recollection. Some of us opposed it at that time on account of the fact that the Alabama Power Co. either owned or had options on the flowage rights where dam No. 2 is constructed; in fact, were entrenched at that particular place.

Mr. WORTHINGTON. That is a fact.

Mr. MCKENZIE. To some of us it looked as though it might be a proposition to enable the Alabama Power Co. to make a profit, which, of course, Members of Congress are always suspicious of in a proposition of that kind.

Mr. WORTHINGTON. That is true.

Mr. MCKENZIE. Finally, after a long discussion, section 124 of the national defense act was agreed upon and enacted into law, and received the approval of the President.

Mr. WORTHINGTON. That is true.

Mr. MCKENZIE. Now, at that time our country was at peace.

Mr. WORTHINGTON. It was.

Mr. MCKENZIE. But the two principal things placed before us at that time were, first, the emphasis of the necessity of having nitrates for the manufacture of munitions, and secondarily to have a plant so constructed that in time of peace it could be utilized for the manufacture of one of the elements that go into the manufacture of fertilizer.

Mr. WORTHINGTON. That is the history of the case.

Mr. MCKENZIE. In my judgment, had it depended upon either one of those propositions alone, section 124 would never have passed Congress; but when the two elements were combined there were enough votes to pass the bill.

Mr. WORTHINGTON. That is my judgment, too.

Mr. MCKENZIE. Section 124 of the national defense act provides that the President shall investigate, and according to his judgment determine the best and cheapest and most available means of the production of nitrate and other products for the munitions of war, and useful in the manufacture of fertilizer. In other words, the proposition was to produce nitrates or other products useful in the manufacture of fertilizer.

Then, going on down through the section it provides that he shall have power to lease, purchase, by condemnation or otherwise, certain property and construct buildings, and so forth, for the manufacture of such products which can be used in the manufacture of munitions and also be useful in the production of fertilizer.

Mr. WORTHINGTON. That is right.

Mr. MCKENZIE. Then further down in the section there was a paragraph thrown in which says that the plant provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital.

Mr. WORTHINGTON. That is right.

Mr. MCKENZIE. That was put in, you well remember, in order to confine the activities of the Government to governmental operations.

Mr. WORTHINGTON. That is absolutely true.

Mr. MCKENZIE. My recollection is that I voted against the bill, not believing in Government operation. Was there anything done under section 124 for a number of years?

Mr. WORTHINGTON. In 1917, there being an apparent danger that the United States would go to war, investigations by the Ordnance Department were made; and finally, you will remember, the President did send out a Cabinet commission of three to look over the country, and they visited certain States. Then, finally, if you remember, there were a number of commissions—at least two, perhaps—that were investigating to find out what processes to use, with the final result that they decided to adopt this modified Haber process, owned by the General Chemical Co. Then—I think it was in 1917, in the fall of 1917—the question of the location came up, and plant No. 1 was located in the western part of Sheffield, Ala. A little while after that some ordnance officers of the English Government, as I understand it, came over here and suggested to our ordnance officers the grave danger of the situation, and there was a rush made to go further, and then came plant No. 2. Then, as you know, they went on and had under construction two more plants, each one half the size, in capacity, of plant No. 2. Those other plants were located near Cincinnati and at Toledo, Ohio. That is, roughly, the history of the matter.

Mr. McKENZIE. You understand I am not criticizing the location of the plant at Muscle Shoals?

Mr. WORTHINGTON. No; I do not so understand your question.

Mr. McKENZIE. Because I believe if there is any place in the world where the Government could possibly manufacture fertilizer and compete with private enterprise it might possibly be at Muscle Shoals.

Mr. WORTHINGTON. I think you are correct about that.

Mr. McKENZIE. But I have never been convinced of that fact; and our friend from Mississippi, Mr. Quin, may have properly stated for the hearing, it seems to me, when telling of his sorrow at the defeat of the appropriation last February, that it was defeated, not because Congress does not approve of the manufacture of fertilizer for use by the farmers, but it was defeated because of the fact that the majority of Congress believed that the Government can not enter upon this enterprise at Muscle Shoals or any other place and produce fertilizer at a price that will enable the Government to compete with the private manufacturers of this product, except at a loss; or, in other words, subsidizing the plant.

Mr. WORTHINGTON. I think that is a fair statement. I do not feel that Mr. Quin could be any sorrier than I was at the defeat of the appropriation. But I rather think now, the way the matter is headed, that it was a good thing.

Mr. McKENZIE. I want to say to the gentleman that I think it was one of the wisest things Congress has done since I have been a Member of it. The enormous waste and extravagance that has been carried on down there demonstrated the utter futility of the Government undertaking to operate this plant to advantage for the farmers or anyone else; and, in view of the fact that we had 300,000 tons of nitrate in reserve on hand to take care of the needs of the War Department, we could not see that it was a wise thing for the Government to proceed with the expenditure of this money until some plan had been adopted, some way had been found whereby this power could be utilized to the advantage of the people of this country without loss to the Government of the United States. Therefore it was defeated.

Mr. WORTHINGTON. That is right.

Mr. McKENZIE. And it was the intention of many of us at least to continue to defeat such proposals until the Secretary of War or the administration could bring about some solution that would enable this development to go on and bring about the results desired by the farmers of this country, and at the same time protect the Ordnance Department in the supply of nitrates. Because of that we held the thing up. I think it was generally known to the men who were doing things in this Government, and out of that grew the proposal of Mr. Henry Ford. He has come forward as one of the men of this country offering to take over this plant on certain conditions. And I will say he has approached the solution of what I believe to be one of the most momentous questions before this country. I think there are great possibilities in it. I have never decried it except that I think it would be folly for the Government to undertake to operate it, but I am in favor of any proposition, whether it is Mr. Ford's or some one else's, whereby somebody will come in and give to the Government a sufficient guaranty that the purpose of the project will be carried out in good faith, and that the Government will be relieved of the responsibility of undertaking to furnish the requirements of this country in a necessary product, on which they would have to pay a subsidy to enable them to sell it to the farmer at anything like a fair price.

In the course of the testimony which has been given to the committee my friend Mr. Miller has criticized, or has brought out the fact that in his opinion the Government is supposed to forever maintain this plant No. 2 to protect it in the supply of nitrate. I do not understand that this proposition in any way affects that. Mr. Ford agrees to keep it in good condition and in operation for 100 years. At the end of the 100 years the plant reverts to the Government, and we still have it, unless we desire to make some other regulation in connection with it.

Mr. WORTHINGTON. And be subject to your call.

Mr. McKENZIE. Absolutely.

Mr. WORTHINGTON. That is entirely true.

Mr. McKENZIE. But I want to ask you this question, as a business proposition: Do you not feel that in a proposition involving so much that there should be a provision in the contract providing that should Mr. Ford, his heirs or assigns, or the corporation which he will afterwards bring into existence, or its successors, fail to carry out the conditions of the contract for the protection of the Government, that a forfeiture should take place? In other words, it is too big a proposition to provide merely for an indemnity of $200,000 or $500,000. If he is in good faith, it seems to me, knowing him as a business man, not personally, that he would not object to that sort of a proposition for the protection of the Government.

Mr. WORTHINGTON. I thought more than once about your question because you know it has been a subject of discussion. On first consideration I believe your viewpoint, as I think you have correctly stated it, is right. But on second consideration, if you will please look at section 18 you will understand what I mean. If Mr. Ford fails, does not comply with the terms of the contract, or in the event of the violation of any—if you please—any of the terms of this proposition or any contract made in furtherance of its terms, the company agrees that the Attorney General may, upon the request of the Secretary of War, institute proceedings in equity in the district court of the United States for the Northern District of Alabama for the purpose of canceling and terminating the lease. Right there let me say if such a thing happens every dollar that Mr. Ford puts at Muscle Shoals is gone. After carefully considering that clause, trying to answer you as a businessman, you having made a business inquiry, I do not think that it will do any good or improve the situation or further clench the security or make you safer to adopt your suggestion, because if the whole thing was to go to pot and fail a mere forfeiture can not be a cure for the thing at all. That is my viewpoint after considering it very fully.

Mr. McKENZIE. According to your testimony and the testimony of others, the Government would not be justified in spending this large amount of money, so far as the navigation of the Tennessee River is concerned; that is your viewpoint?

Mr. WORTHINGTON. Yes.

Mr. McKENZIE. Having in mind the very large reserve of nitrates we have on hand at present, and the possibilities of acquiring additional nitrates in other ways, is it your judgment that the Government of the United States at this time would be justified in considering this an emergency that would warrant us in appropriating money simply to take care of the nitrate end of the situation for war explosives?

Mr. WORTHINGTON. If you had not expended on the dam the amount you have expended I would not be able to support the proposition. But you having, however, expended the amount you have on the dam, I have never seen any way out of it except to do what is proposed. That is my position.

Mr. McKENZIE. You qualified that to some extent. To my mind there is no such emergency that would justify us in spending $50,000,000 immediately to acquire a larger supply of nitrates just at this time.

Mr. WORTHINGTON. Not simply for explosive purposes.

Mr. McKENZIE. Coming back to the other proposition, those two things being true, then the only justification for the expenditure, either by the Government or under Government operation or leasing the property to Mr. Ford or someone else, rests on the fact that in this country, according to the statements of the leading agriculturists of our country, there is an emergency, so far as fertilizer is concerned.

Mr. WORTHINGTON. That is true.

Mr. McKENZIE. And that it is essential and necessary that something be done, and on that you base your claim for this action at this time.

Let me ask you another question. Of course, we all agree that there is a very great potential water power at that point. In case the Government should build the dam and the powerhouse, acting on the theory that it could be sold or leased, do you believe, or is it your judgment on that as a man of long experience in business, that Mr. Ford's company or any other company or individual would be justified in the expenditure of the vast sum of money that would be necessary to erect a plant at Muscle Shoals and utilize this power, that would be justified under a lease of 50 years?

Mr. WORTHINGTON. Indeed I do not.

Mr. McKENZIE. Do you express it as your judgment that it is doubtful at least that the Government could find a lessee that would take the property over on any such conditions?

Mr. WORTHINGTON. I do not think you can, if you require that lessee of the power to carry out your intentions in reference to fertilizer. You might pos-

sibly get somebody, not including Dam No. 3, to complete Dam No. 2; you might possibly get somebody to agree to 50 years, but I do not think so. I do say that I think it would be a very unbusinesslike proposition.

Mr. McKENZIE. Are you willing to state that it is your judgment that under the Ford proposition the Government will be selling him power at a very reasonable rate, if not a low rate; in other words, if he undertook to construct the dam and create the power himself and operate it, it would cost him a great deal more than the $2,000,000 which has been estimated as the amount of 4 per cent interest or rental he would have to pay?

In other words, looking at it from a cold, business standpoint, is it not true that the Government would be giving to Mr. Ford at least charitable consideration on that point?

Mr. WORTHINGTON. Would you not be willing to substitute the word "favorable" for "charitable?"

Mr. McKENZIE. Yes.

Mr. WORTHINGTON. While, it is undoubtedly true; and if I may follow that just a bit, let me say that the Government, under the circumstances, in view of the Government's investment down there, has made a good trade to do it, with the understanding, and I am sure certainly with the belief that you are going to see some satisfactory results in obtaining low costs with cheap power.

Mr. McKENZIE. After all, getting right down to brass tacks, Mr. Worthington, is there not involved in this proposition, after we do develop it, from every standpoint, that the Government is going to be the loser, in a sense, financially, just figuring in the matter of dollars, but in the hope that all the conditions coupled up with it, in view of the potential elements and benefit that it is going to be to agriculture, you feel, and that is the feeling of the men behind you, representing the agriculturists down in that country and all over the United States, that it will be worth the price?

Mr. WORTHINGTON. I very positively tell you I do feel that way.

Mr. McKENZIE. And in view of the many other expenditures that our Government has made, upon which we have never received any return——

Mr. WORTHINGTON (interposing). And never will——

Mr. McKENZIE. I want to say to you very frankly, Mr. Worthington, that if Mr. Ford or some one else has the genius to unscramble this proposition, I think I should be very glad to favor some proposition to enable the Government, not, I would say, to unload this proposition, but to put it into the hands of some one so that it can be operated successfully and without loss to the Government.

Mr. WORTHINGTON. Put it to work.

Mr. McKENZIE. That is it.

Mr. MILLER. Mr. Worthington, did you get the idea from my questions yesterday that I favored a kilowatt tax?

Mr. WORTHINGTON. Oh, no.

Mr. MILLER. I understood you to intimate that I did.

Mr. WORTHINGTON. Oh, no; I am very sure you do not, coming from your State.

The CHAIRMAN. We are very much obliged to you for the very enlightening information you have given us.

(Thereupon the committee took a recess until 2 o'clock p. m.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Friday, February 17, 1922.

STATEMENT OF MR. HUGH L. COOPER, OF STAMFORD, CONN.

The CHAIRMAN. Mr. Cooper, will you state your name in full, your present occupation, and some of the big engineering works that you have been connected with?

Mr. COOPER. My name is Hugh L. Cooper, and my residence is Stamford, Conn., and I have been a consulting engineer for about 20 years, and in the practice of hydraulic engineering for about 30 years. I have built several water powers in different parts of the world. One of them was at Niagara Falls and one was at Keokuk, Iowa, and one at McCalls Ferry, Pa., one in Brazil, one in Chile, several in Canada, and, I think, the aggregate of them all is something in excess of 1,000,000 horsepower, not including the Muscle Shoals work, where I am the consulting engineer for the Government. I would like to say I got into this dam job very peculiarly.

The CHAIRMAN. I did not quite catch that?

Mr. COOPER. I want to say that I got into this dam job, it is a damn job, and I mean just that, in a very peculiar way. It was not from my seeking. I have been hearing about the Muscle Shoals job for 15 years, and about every time anybody wanted to do anything in the last 15 years the Muscle Shoals job has been in the road. It was in the road in Congress. It was called a job. I do not think it ever was a job in the sense some of its maligners called it; at the same time it was used to defeat a great deal of good legislation in the aid of water power; and, as far as I am personally concerned, I would be very glad if something could happen out of this investigation that would speed the day when it is done, finished, and we get rid of it.

When I was in the service in France I was ordered home by somebody; I do not know who it was; I suppose it was the Secretary of War, to build this job, and, of course, that was very disagreeable news to me. On arrival I went to work as hard as I could and started the work and redesigned it, and it was about two months under way when I got ordered back to France. I never knew exactly how that happened, except I knew it meant a lot of hard work after I got over there. Then, when I came home, I found that the Chief of Engineers had been changed and that the new Chief of Engineers said that in view of the fact they were following plans which I had recommended when I was in the service, he thought that I owed it to the Government to keep right on, on a Government basis, and do this work for nothing, and I have been fool enough to do it up to this time.

I do not say that in any spirit of disrespect to anybody, but I do say that it is a little strange, in my experience at least, to be the designer and responsible for the execution of plans for forty or fifty million dollars of work for $1 a year, after the armistice is signed, and that is another reason I would like to see somebody hurry up and get this dam done.

The CHAIRMAN. Mr. Cooper, I want to congratulate you on the fact that you have been willing to serve your country without sticking your hands into the Treasury and trying to pull out a big plum.

Mr. COOPER. Thank you very much.

Now, I have a very definite sympathy for the committees in Congress that have to listen to testimony, especially testimony from engineers. As a rule, they do not know what they are trying to say very well, and the second thing is they do not very well know how to say that which they do know, and realizing that this committee is pretty well tired out and also because of the

fact that I have only been investigating this Ford proposal for about three days, I naturally have not a great deal to say about it, but I have prepared four or five statements, and I think perhaps it would facilitate and hasten this investigation or my testimony, at least, if I would pass this around to you gentlemen, and then they can ask their questions and we will get through a lot quicker and we will not have near as much trouble about wandering testimony.

The CHAIRMAN. Would it take very long to read the statement?

Mr. COOPER. No; they are reasonably short.

The CHAIRMAN. I think probably the better way would be to read it and let the members digest it, as you read it, and then ask you questions about it.

Mr. COOPER. Before entering upon these particular statements, I wish to make very emphatic one thing, and that is I am not here in advocacy of Mr. Ford's proposal or anybody else's proposal, or against anybody's proposal, Mr. Ford's included. As I take the chairman's telegram to me, what he wanted me to do was to come down here and tell what few facts I could about Mr. Ford's proposal as submitted, and then to answer as best I can such questions as you may desire to ask me.

In looking over the Ford proposition, based upon my knowledge of the extent of the work and the cost of it, and the terms of the proposed payments for the use of it, as contained in the Ford proposition, the first thing that astounded me was the difference between the amount of money that the United States Treasury was going to pay out and the amount that they would get back during the lease period.

Now, my statement No. 1, which is an analysis of the final statement on page 3, shows, if my figures are correct and I think you will find they are, that the expenditures of the Ford proposition as written will cost the Treasury of the United States $1,275,000,000. That is an absolutely flat fact. I am referring now only to the power question. It has nothing to do with the nitrate plants at all.

On page 2 you will note that there is a statement of the estimated cost of the dams Nos. 2 and 3, amounting to $83,175,475. That is the cost at the time Mr. Ford agrees to pay 4 per cent return on what turns out to be $50,000,000. His proposition, as interpreted by me, and as confirmed by statements from the War Department engineers, showed he is going to pay into the Treasury 4 per cent on about $50,000,000, which is $2,000,000 a year.

In arriving at this rather startling sum of $1,275,000,000 I have taken the total, as you see, specified as $83,175,475, and compounded it annually at 4 per cent for a balance of the lease period. I use 4 per cent because that is the per cent used in Mr. Ford's document. It is believed by most men I hear talk that that is a fair rate of interest to consider for public funds. When the cost is $83,175,475 to the Treasury, Mr. Ford begins to pay into the Treasury $2,000,000 a year. If the Treasury invests that $2,000,000, which I believe they could do, at 4 per cent, at the end of the lease period the money produced by the 4 per cent on the $2,000,000 payments would be $1,275,000,000 less than the cost to the Treasury of the $83,175,000 during the lease period. That is all I have to say about that statement. If anyone cares to question me about that statement, I think now would be a good time to do it.

The CHAIRMAN. I think, for the benefit of the record, you ought to put into the record the detailed statement you have given to members of the committee.

Mr. COOPER. I will be glad to have that go into the record.

(The statement referred to is as follows:)

PROPOSED FORD CONTRACT FOR MUSCLE SHOALS POWER.

STATEMENT NO. 1.—RE DIFFERENCE BETWEEN MR. FORD'S LEASE PAYMENTS TO THE UNITED STATES TREASURY AND THE AMOUNT THE TREASURY WILL HAVE TO PAY OUT IF MR. FORD'S PROPOSAL IS ACCEPTED AS WRITTEN.

1. In what follows, 4 per cent interest is assumed to be the best interest rate the Treasury of the United States can avail itself of during the next 100-year period, and it is to be noted that this 4 per cent rate is the base rate of all the calculations in Mr. Ford's proposal, and therefore this assumption can not be criticized as inharmonious with the letter and spirit of the Ford contract now before Congress.

2. I find that at the time Mr. Ford will begin the payment of a full 4 per cent interest return to the Treasury of the United States the sums expended by the United States Government up to this 4 per cent payment basis, as estimated by the Chief of Engineers, will be as follows:

For completion of Dams Nos. 2 and 3	$50,000,000
Interest accrued during the construction prior to the beginning of the 4 per cent interest payments less interim interest payments made by Mr. Ford (War Department estimate)	13,844,475
Previously spent on Dam No. 2 (War Department estimate)	17,000,000
Cost of flowage rights for Dam No. 3 (War Department estimate)	2,331,000
Total	83,175,475

3. For the purposes of a fair and parallel comparison I have assumed, in order to get a correct figure representing the loss to the Treasury in dollars, in this transaction, that the Treasury cost of the above total of $83,175,475 at the rate of 4 per cent interest would be compounded annually for the lease period, thus producing a grand total of $3,304,095,000 demand on the Treasury.

4. Investing the $2,000,000 Mr. Ford proposes to pay into the Federal Treasury annually, which is 4 per cent of the estimated cost to complete the job, which estimated cost (United States Engineers' Department estimate) to complete is $50,000,000. Such a plan would return to the United States Treasury at the end of the lease period $1,979,185,000.

5. This, you will note, results in a grand total deficit (excluding the amortization payments in paragraph 10 of the Ford contract) to the Treasury of $1,324,910,000.

6. Mr. Ford's amortization payments, in paragraph 10 of his contract, are planned to amortize $50,000,000 of the above deficit, leaving a net deficit for the Treasury to provide for of $1,275,000,000.

STATEMENT NO. 2—RE AMOUNT OF LOW-TENSION HYDROELECTRIC ENERGY DELIVERED TO GENERATOR STATION BUS BARS THAT WILL BE CREATED BY THE COMPLETION OF DAMS NOS. 2 AND 3 ACCORDING TO THE REQUIREMENTS OF MR. FORD'S PROPOSAL.

A kilowatt is 1⅓ horsepower.

A horsepower is three-fourths of a kilowatt.

Primary power is power that is available 365 days per year.

Secondary power is power that is available for some fraction of 365 days per year.

The secondary power, mentioned below, will be available from a minimum of 4 months per annum to 11⅔ months per annum.

1. When projects Nos. 2 and 3 are completed, and, making no allowance for the value of important storage reservoirs in the Tennessee River above Dams Nos. 2 and 3, that future public interest will require to be constructed, the capacity to be installed in projects Nos. 2 and 3 (No. 2, 600,000 horsepower; and No. 3, 250,000 horsepower) will produce an average annual kilowatt delivery to generator station bus bars as follows:

	Kilowatt hours.	
	Primary.	Secondary.
Dam No. 2	700,000,000	1,490,000,000
Dam No. 3	285,500,000	608,000,000
Total	985,500,000	2,098,000,000

2. The total annual energy (primary and secondary) supply from both stations will, therefore, be 3,083,500,000 kilowatt hours.

3. The average cost to Mr. Ford of the total energy in paragraph 2 is (see statement No. 3) $3.622,246 annually, or at a rate of 1.18 mills per kilowatt hour, a cost far lower (about 50 per cent) than can be arranged for elsewhere on the American continent.

4. In average generator station practice in the American hydroelectric field secondary kilowatt hours are figured at about 50 per cent of the value of primary kilowatt hours.

5. On the basis of the relative values specified in paragraph 4, the costs to Mr. Ford for primary and secondary power become as follows:

985,000,000 kilowatt hours, at 1.81 mills	$1,782,850
2,098,000,000 kilowatt hours, at 0.905 mill	1,898,690
Total	3,681,540

Mr. Ford's annual payment for the foregoing energy (par. 3) is slightly less than the above grand total, and therefore the use of the unit costs of 1.81 mills and 0.905 mill, respectively, for primary and secondary power is conservative.

It will be interesting to show now what the gross annual cost of $3,622,246, as shown in statement No. 3, applied to the energy produced from Dams Nos. 2 and 3, as shown by statement No. 2, will yield as to costs per horsepower per annum for the various classes of power. Assuming 8,000 hours' annual use for 24-hour power and 5,256 hours' annual use for the best annual load factor (about 60 per cent) that can be built up in commercial work in the territory reachable from Muscle Shoals shows the following horsepower net costs to Mr. Ford:

(*a*) For 24-hour power annual cost, 8,000 hours×1.81 mills×0.746=(primary power), $10.80 per horsepower.

(*b*) For 60 per cent load factor power annual cost, 5,256 hours×1.81 mills×0.746=(primary power), $7.10 per horsepower.

(*c*) For 24-hour power annual cost $\frac{0.905}{1.81}\times 10.80$=(secondary power), $5.40 per horsepower.

(*d*) The total energy of 3,083,500,000 kilowatt hours, specified in paragraph 2, is equivalent to an average of 517,000 horsepower used 8,000 hours per annum. This 517,000 horsepower will cost Mr. Ford $3,622,246 per annum, or at the rate of $7.01 per horsepower, a price considerably less than one-half of what similar power can be secured for elsewhere on the American continent.

NOTE.—The foregoing amounts of energy were computed for a capacity of 550,000 horsepower for Dam No. 2. These energy amounts have not here been increased to correspond to the 600,000 horsepower capacity called for at Dam No. 2 in the Ford proposal. This omission will amply provide for the capacity needed to develop a 60 per cent load factor for primary power as above used.

7. The horsepower costs to Mr. Ford, as specified in paragraph 6, are approximately half the same costs at Keokuk and at Niagara Falls, on either side of the international boundary, and similarly are less than half the costs of the same class of energy in the commercial power territory reachable from Muscle Shoals.

8. It is apparent, therefore, that the Ford proposal calls on the Federal Treasury for $1,275,000,000 during the next 100 years in order that Mr. Ford may secure sole unregulated possession of the greatest water power the South has and at a cost to Mr. Ford around one-half of what similar power is available for elsewhere on the American Continent.

STATEMENT NO. 3—RE OPERATION AND MAINTENANCE OF MUSCLE SHOALS WATER POWERS.

1. I estimate the annual cost to Mr. Ford to operate and maintain Muscle Shoals Dams Nos. 2 and 3, up to and including low-tension bus bars, will be:

Operation, 850,000 horsepower, at 60 cents per horsepower year		$510,000
Repairs and maintenance:		
For Dam No. 2 (specified in contract)	$35,000	
For Dam No. 3 (specified in contract)	20,000	
		55,000
Renewals:		
Machinery in power house—		
For Dam No. 2, to replace 18 units every 30 years, costing $16 per horsepower installed, calls for an annual sinking fund, bearing 4 per cent interest, compounded annually, of	155,000	
For Dam No. 3, to likewise replace units in this plant, requires	65,000	
		220,000

Renewals—Continued.		
Buildings, etc.—		
For Dam No. 2, replacement of power house, auxiliary buildings, intake gates, screens, etc., annual charge	18,000	
For Dam No. 3, for similar replacement	7,500	
		25,000
Rental:		
For Dam No. 2, 4 per cent on estimated cost to complete for 600,000 horsepower capacity, $27,000,000	1,080,000	
For Dam No. 3, 4 per cent on estimated cost for 250,000 horsepower capacity plant, $23,000,000	920,000	
		2,000,000
(The above total of $50,000,000 is the amount estimated by the Chief of Engineers as necessary to complete Dams Nos. 2 and 3.)		
Taxes, 850,000 horsepower, at 90 cents per horsepower year		765,000
(This charge includes local and State taxes only, as Mr. Ford's proposal, as written, excludes Federal Power Commission jurisdiction.)		
Annual amortization payment called for in paragraph 10 of Ford proposed contract		46,746
Total yearly operating expenses after Dams Nos. 2 and 3 are completed		3,622,246

STATEMENT NO. 4—RE SHOWING IF 4 PER CENT INTEREST IS PAID BY MR. FORD ON TOTAL COST OF DAMS NOS. 2 AND 3, AND PAYS $79,432 ANNUALLY TO AMORTIZE $83,175,475, WHICH IS THE ABOVE TOTAL COST.

If Mr. Ford should amend his offer to pay 4 per cent on the total cost of Dams Nos. 2 and 3 (see statement No. 3, pp. 8, 9), his gross annual cost of power would be as follows:

(1) 4 per cent interest on $83,175,475	$3,327,019
(2) Add operation charges (as per statement No. 3, on pp. 8, 9), $3,622,246, less $2,000,000 interest charges	1,622,246
(3) Add to complete the amortization of $83,175,475, not included in item (2) above	32,686
Total annual cost for power	4,981,951

On the basis of the above annual cost of $4,981,951 applying to an annual production of 3,083,500,000 kilowatt hours, the kilowatt hour cost becomes 1.62 mills.

For primary power used 8,000 hours yearly, Mr. Ford's annual cost would be	$14.83
For 60 per cent load factor (general commercial power) primary power, Mr. Ford's annual cost would be	9.75
For 24-hour secondary power, Mr. Ford's annual cost would be at the rate of	7.41
The total energy created of 3,083,500,000 kilowatt hours is equivalent to an average of 517,000 horsepower used 8,000 hours per annum; this 517,000 horsepower will cost Mr. Ford	9.64

All of the above costs per horsepower are at least 20 per cent lower than present costs for the same classes of power elsewhere in the South or at Keokuk or Niagara Falls.

NOTE.—The use of 8,000 hours annually is here assumed for primary power, because 8,000 hours is about the average annual use when deductions for normal shutdowns and repair requirements are allowed for.

The above plan of paying 4 per cent on total costs would fully amortize the total costs of Dams Nos. 2 and 3 at the end of the lease period, and would save the Treasury of the United States during the lease period $1,275,000,000, equivalent to an average annual saving of over $13,500,000.

The CHAIRMAN. You say that according to Mr. Ford's agreement, or according to his statement, he will begin to pay $2,000,000 a year on Dams Nos. 2

and 3. and that the aggregate cost of the completion of the dams will be about $83,175,475.

Mr. COOPER. Yes. But he only pays on the cost of the new money required to complete Dams. Nos 2 and 3, which is estimated by the War Department to be $50,000,000.

The CHAIRMAN. Where do you get the figure that you also refer to as the probable cost to the Government of these dams, namely, about $1,000,000,000?

Mr. COOPER. The cost of the dams is $50,000,000.

The CHAIRMAN. Where do you get the figure of $1,000,000,000 you were speaking of?

Mr. COOPER. I assume the Government would have to borrow the $83,000,000, because it has not got it, and that it will have to keep on borrowing to pay the interest on the $83,000,000. In other words, you compound it at 4 per cent interest. The $83,000,000 is the total amount that is invested in this enterprise; and I have compounded the interest exactly the way we would do in private business. Incidentally, I would like to say that it is my humble opinion that the Government of the United States at all times should consider the cost of interest just as much as they consider the principal, and thus find out more correctly the extent of the Government's commitments in these big enterprises. Taxes for interest and principal come out of the same set of pockets.

The CHAIRMAN. This morning evidence was adduced before the committee to the effect that we have a great deal of river and harbor work every year in the different sections of the country, and no interest is ever charged on that work.

Mr. COOPER. That is a matter of policy for the Congress to decide. This is power business, and it is quite different. We are paying the money out, and the taxpayers are paying the interest as well as the principal.

The CHAIRMAN. You think this money can not be raised in any other way than through a bond issue?

Mr. COOPER. I am not enough of a financier to say that, but I notice that is about the way you are doing right along.

The CHAIRMAN. It has been contended by some members of the committee that this money could be raised by the ordinary process of levying taxes. That would not require the payment of any interest, and that is the way most of the river and harbor work is done.

Mr. COOPER. You are all the time paying it because you are all the time borrowing. It does not make any difference what you call your borrowing, you are continually paying out interest on coupons, and that fixes the price of money. If you did not spend this $83,000,000 on this enterprise you could take up and retire $83,000,000 worth of bonds, and save the payment of 4 per cent interest on that amount. So I think it is conservative to here use 4 per cent in calculating the cost to the United States Treasury of Mr. Ford's proposal.

Mr. WURZBACH. Would you not take into consideration the amount of money the Government already has invested in Dam No. 2, and figure the 4 per cent interest on approximately $16,000,000? I think we have that much invested.

Mr. COOPER. Yes.

Mr. WURZBACH. And compound the interest at 4 per cent on that sum for 100 years, and would you not eat up that amount from the $1,275,000,000?

Mr. COOPER. No; this $16,000,000 is already spent and you are now paying more than 4 per cent on this loan. The deficit to the Treasury at the end of the lease period will be the figure set down in statement No. 1; that is, $1,275,000,000. There is nothing theoretical about it; it is a practical fact.

Mr. QUIN. Mr. Cooper, where do you get the other $33,000,000 from? You state it will cost about $50,000,000 for the dams, according to the Army engineers.

Mr. COOPER. To finish them.

Mr. QUIN. Where does the other $33,000,000 come from?

Mr. COOPER. On the top of page 2 is the statement of how that is made up. Do you want me to read that to you?

Mr. QUIN. Yes, sir; I wish you would.

Mr. COOPER. First, we have the interest accrued during the construction prior to the beginning of the 4 per cent interest payments, less the interim interest payments made by Mr. Ford, according to the War Department estimate. That amounts to $13,844,475, and that is interest at 4 per cent on the expenditures up to the time Mr. Ford begins to pay his 4 per cent. You may remember in his proposition he proposes to make six annual payments of $200,000 a year on one dam, and three annual payments of $160,000 a year on the other dam. After they are deducted there is left this $13,844,475.

Mr. QUIN. You are leaving in there the $16,000,000 already expended?

Mr. COOPER. I think the Secretary of War stated it as $17,000,000. I think it will be $17,000,000, and I have included that amount in my figures. The last item is the item in reference to the overflowed lands, amounting to $2,331,000, and that makes a total of $83,175,475. These are the War Department figures which I have confirmed this morning in consultation with the Chief of Engineers.

Mr. QUIN. This proposition covers a governmental activity for navigation, a quasi governmental activity for fertilizer, and nitrates; that is what is proposed, is it not?

Mr. COOPER. I do not think I am competent to pass on that. I can only tell you about the engineering side of it and the cost side of it. Just what the Government plans are is something I do not know anything about.

Mr. QUIN. You are just putting up the proposition that Mr. Ford ought to be charged with all the interest on the amount invested at 4 per cent?

Mr. COOPER. Before I get through I have a constructive suggestion to make to the committee about this 4 per cent proposition. I think I will be doing a real service, in helping along a plan that will enable Congress to accept Mr. Ford's proposition unless something very much better comes along.

Mr. QUIN. According to your method of reasoning, Mr. Cooper, the Government would be charging up against the folks 4 per cent interest, based on the $700,000,000 we have put in the river and harbor improvements since we have been engaged in that line of activity for the benefit of all the people; is that true?

Mr. COOPER. I do not think that is hardly an analogous case, although if I were to express my personal opinion I would say that nothing on rivers and harbors should ever be done unless you could see it was going to earn something.

Mr. QUIN. We think it earns something for the benefit of commerce.

Mr. COOPER. What the value of the Ford proposition from the point of view of navigation or war preparation is, you might as well ask the elevator boy; I do not know anything about it.

Mr. QUIN. You think Dam No. 2 ought to be finished?

Mr. COOPER. I certainly do.

Mr. QUIN. Did you design Dam No. 3?

Mr. COOPER. No, sir.

Mr. FISHER. Mr. Cooper, you have been a witness at practically every investigation that has been made by Congress in reference to Muscle Shoals, have you not?

Mr. COOPER. Yes, sir; and probably on every water-power proposition in the last 15 years.

Mr. FISHER. In reference to your estimate of the Ford offer, I would like to ask you just what value you place on plant No. 2, taking into consideration having it ready under the terms of the contract always as a nitrate plant for the Federal Government and subject to the Government's demand.

Mr. COOPER. You mean how much I estimate it would cost to finish it?

Mr. FISHER. What is the value of the plant to the Government? You gave figures as to what the Ford offer would cost the United States.

Mr. COOPER. Yes.

Mr. FISHER. Under the terms of the contract, Mr. Ford has agreed to deliver nitrate plant No. 2 all the time ready for the United States Government when not in use by the United States Government, but subject to its demand in time of war, and to maintain there a laboratory for the use of the Army officers in connection with nitrate preparedness; and at the end of the 100 years to turn back to the United States that plant in perfect condition to manufacture nitrates if the Government wants it. Have you estimated what that value is to the United States Government?

Mr. COOPER. No.

Mr. FISHER. Have you estimated it at all? Have you in your figures, which run up to a very considerable amount, esitmated what the value would be to the United States to have there a fertilizer factory which will produce fertilizers for the farmers of this country? You have made an estimate amounting to a tremendous sum as to what the Ford offer would cost the United States Government. I ask you have you made any estimate of the value of the other propositions?

Mr. COOPER. No.

Mr. WRIGHT. Colonel, did you take into consideration the amount Mr. Ford pays annually into the amortization fund?

Mr. COOPER. Yes, sir; the figures are all there.

Mr. WRIGHT. What do you say it will amount to at the end of a hundred years?

Mr. COOPER. $1,275,000,000.

Mr. WRIGHT. Do you tables show how you arrived at that figure?

Mr. COOPER. Yes.

The CHAIRMAN. On what page are those figures?

Mr. COOPER. On pages 1, 2. 3, and 4. I can send to the committee the detailed mathematical calculations from one stage to another if you desire it. These are the results.

The CHAIRMAN. If you would like to have it put in the record we will be glad to have it.

Mr. COOPER. I do not care what goes into the record.

The CHAIRMAN. The chairman would be very glad to have your statement put into the record.

Mr. COOPER. You shall have it.

Mr. STOLL. Mr. Cooper, I do not know whether I understand your statement correctly or not. You mean if the Government accepts Mr. Ford's offer and completes Dam No. 2 and builds Dam No. 3 at a total cost of $50,000,000, that at the end of the lease period it would cost the Government $1,275,000,000 more than Mr. Ford pays to the Government.

Mr. COOPER. Yes; I mean exactly that.

Mr. STOLL. That is all predicated on the idea that the Government is investing that money at 4 per cent interest?

Mr. COOPER. That money is worth 4 per cent, whether it is loaned or received.

Mr. STOLL. The Government has never undertaken to lend out money, has it?

Mr. COOPER. Yes; I think it has. If you pay 4 per cent for your loan that established the price, or rather the value, of money.

Mr. STOLL. If an individual had a hundred thousand dollars and he laid it aside and did not invest it, at the end of 25 years he would still have the hundred thousand dollars in his safe deposit box.

Mr. COOPER. Yes; but it would not be good business.

Mr. STOLL. No; but he would not have anything but the $100,000. If the Government is in the business of loaning money, the $50,000,000 they spend to build this dam, unless they do put it out at interest, they still will have at the end of the 100 years.

Mr. COOPER. I do not think that is quite true, because as long as the Government is borrowing it will be paying interest at the rate of 4 per cent, which it ought to be protecting itself against. If the Government did not loan Mr. Ford $2,000,000 annual payments, but instead used this money to reduce loans already out the net results on the Treasury would be the same as if these payments were actually loaned.

Mr. STOLL. But this is all predicated on the idea that the Government puts this money out, which it does not do.

Mr. COOPER. It does it in effect, as long as the Government borrows money, and I guess it will always be a borrower.

Mr. STOLL. In effect; but the fact is they do not do it; so that you have figured this on a false basis, have you not?

Mr. COOPER. No; my basis is in no sense a false basis, as I have previously explained.

Mr. STOLL. They have spent $16,000,000 on Dam No. 2, have they not?

Mr. COOPER. Yes; I think it will be about $17,000,000.

Mr. STOLL. Could that dam be salvaged at any value?

Mr. COOPER. No, sir.

Mr. STOLL. It has to be completed, or it is useless, and there will be that much money thrown away?

Mr. COOPER. That is correct.

Mr. STOLL. Suppose it is not completed. Have you figured what it would cost the Government for 100 years, based on the $17,000,000?

Mr. COOPER. I have not.

Mr. STOLL. Would it not be practically one-third of what it would be on the $50,000,000?

Mr. COOPER. Yes.

Mr. STOLL. Which do you think is the wiser proposition, to complete the dam or not to complete it?

Mr. COOPER. It is much wiser to complete it for many reasons.

Mr. GARRETT. Mr. Cooper, on page 2 of your statement you have estimated for the completion of Dams Nos. 2 and 3, $50,000,000?

Mr. COOPER. Yes.

Mr. GARRETT. That is the estimate of the Government engineers?

Mr. COOPER. Yes.

Mr. GARRETT. Mr. Ford's engineers estimated the cost to be about $42,000,000. What do you think it will cost?

Mr. COOPER. I think Mr. Ford's engineers are mistaken.

Mr. GARRETT. You think your figures are right?

Mr. COOPER. I think they are. and if there is any change made it will be more than $50,000,000, instead of less.

Mr. GARRETT. On what do you base that statement?

Mr. COOPER. On 30 years' experience in building dams.

Mr. GARRETT. And the $33.000,000 additional which you add would bring the total up to $83,000,000. Those items are made up of one of supposed interest for a certain period, another is for money already spent on the dam, and then there is another item for flowage rights. You put all of those elements of cost in your estimate and add to that the $50,000,000, which makes a total of $83.000,000, and then you calculate on that basis for the next 100 years.

Mr. COOPER. It does not come quite to 100 years; it is about 94 years.

Mr. GARRETT. At the end of the lease period.

Mr. COOPER. Yes.

Mr. HULL. Mr. Cooper, I was unfortunately not able to be here at the beginning of your statement. Have you covered the question of the 100-year lease to Mr. Ford? Do you consider that unreasonable?

Mr. COOPER. Very.

Mr. HULL. Why?

Mr. COOPER. Because nobody on earth can tell anything about the conditions 100 years from now, or any fraction of 100 years from now. If you will look at the conditions in 1822 and run your mind's eye over what has happened between 1822 and 1922, you can readily see no human being could have made a contract in 1822 that would have covered the conditions that have occurred since that time even for a 50-year period.

Mr. HULL. As a business man would you spend fifteen or twenty million dollars without having a lease of 100 years?

Mr. COOPER. Yes; I am an engineer for corporations that are planning to spend more than $100,000,000 on 50-year leases now.

Mr. HULL. What is the lease on the Keokuk dam?

Mr. COOPER. That is perpetual?

Mr. HULL. You built the dam?

Mr. COOPER. Yes.

Mr. HULL. Did you think that was unreasonable?

Mr. COOPER. You mean the time?

Mr. HULL. Yes, sir.

Mr. COOPER. No, I did not think so; but I will tell you that coal in that district was $1.40 a ton, against which we had to compete.

Mr. HULL. What is the price of coal now?

Mr. COOPER. There?

Mr. HULL. Yes.

Mr. COOPER. I think it is about $2.30.

Mr. HULL. What are you getting for horsepower out there?

Mr. COOPER. That comes a little later in this same paper, and if you can kindly let me get to it in that way, I would prefer it.

Mr. HULL. Certainly. A year ago, if I remember correctly, your testimony was to the effect that the Government could finish this proposition itself.

Mr. COOPER. Yes; and if the Government will take my advice it would do that now.

Mr. HULL. You would recommend that now?

Mr. COOPER. Yes; right now.

Mr. HULL. What do you think we could get for the power there? That is, what do you think the rate per horsepower would be?

Mr. COOPER. I think you could lease it on the basis of a return to the Government of 5 per cent on all the money they put in it.

Mr. HULL. Of course, that is on Dam No. 2?

Mr. COOPER. Yes.

Mr. HULL. You would not build Dam No. 3?

Mr. COOPER. I do not know much about Dam No. 3.

Mr. HULL. Would you have to build Dam No. 3 to have navigation?

Mr. COOPER. Yes.

Mr. HULL. You would have to take that into consideration if you were trying to solve the navigation problem at the same time?

Mr. COOPER. Yes.

Mr. HULL. You have not any opinion in regard to nitrate plant No. 2, or plant No. 1? In reference to that part of it you have not any fixed opinion?

Mr. COOPER. No scientific opinion, but a little later I would like to tell you something that has recently come to my attention about the fertilizer game itself that may apply to those two plants.

Mr. HULL. You said the 100-year period is unreasonable. What would be a reasonable length of time for a lease on this property?

Mr. COOPER. I think 50 years would be a maximum time. That time should not be allowed unless the lease was subject to public service regulation.

Mr. HULL. He would be subject to the laws of Alabama, would he not?

Mr. COOPER. I do not know anything about that part of it. I have seen a statement in the newspapers that he was not to be subject to the laws of any State or the United States, in that sense. I do no mean to say that the gentleman was contemplating murder, or anything of that kind, but I mean, in direct reply to your last question, that he would not come under the Federal water power law or not under the State law. He is to have a straight lease, and that would exempt him from the action of the laws of Alabama. That is what I have seen and read; I do not know anything about it except what I have read in the newspapers.

Mr. HULL. I think not; but that is a question we can take up later. You as an engineer take the 50-year limit of the Federal water power law as a proper limit?

Mr. COOPER. Yes; it is long enough.

Mr. HULL. In all cases?

Mr. COOPER. Yes.

Mr. HULL. I am glad to hear you say so.

Mr. COOPER. I have always said so.

Mr. HULL. I have understood that most engineers think that is a handicap.

Mr. COOPER. I have been advocating the 50-year period for 10 years.

Mr. HULL. Let us go back to the question of the Government finishing the proposition. Suppose the Government would finish it. You understand, of course, that it would be impossible to administer it through Congress, and the Government could not administer it unless a corporation was organized to take it over; is that not true?

Mr. COOPER. That is true, but my theory in connection with that, Mr. Hull, is that you can always get a better price for something that is usable than for something that is about half completed.

Mr. HULL. I am glad to hear you say that, because you are an expert, and I have advocated that thing for some time.

Mr. COOPER. We are in entire accord on that.

Mr. HULL. You say it would take $50,000,000 to finish it?

Mr. COOPER. I think so.

Mr. HULL. You could not finish it for less and make the river navigable?

Mr. COOPER. Not navigation that would be equally valuable. You could restore the canals along there, but the canal navigation is not worth much.

Mr. HULL. There would not be any question that if we finished it, as proposed in the Ford proposition, that we would have good 6-foot navigation up the river?

Mr. COOPER. No question on earth about that for the stretch of the river affected by dams 2 and 3.

Mr. HULL. There is not any question about the power that these dams will develop under the Ford proposition, is there?

Mr. COOPER. I do not think so.

Mr. MILLER. Mr. Cooper, what period of time have you allowed for the completion of Dam No. 2?

Mr. COOPER. Thirty-six months.

Mr. MILLER. How long do you consider it would take to construct Dam No. 3?

Mr. COOPER. About the same time.

Mr. MILLER. Would you carry on those operations simultaneously, or would you complete Dam No. 2 and then go to Dam No. 3?

Mr. COOPER. Complete Dam No. 2 first.

Mr. MILLER. Then you have a period of six years to cover.

Mr. COOPER. Yes, sir.

Mr. GREENE. Of course, the Federal Government now holds the lessees of water power to a 50-year contract.

Mr. COOPER. Yes.

Mr. GREENE. If we were to give Mr. Ford 100 years we might give him the advantage in the way of competition with people who do not derive the support of the Federal Government in their enterprises.

Mr. COOPER. And if the price of coal goes up, as nearly everybody thinks it is going, at the end of 100 years the Ford lease would be worth a perfectly fabulous sum.

Mr. QUIN. Mr. Cooper, your interest charge which you have allowed would bring Mr. Ford out in debt to the Government to the amount of $1,200,000,000, would it not?

Mr. COOPER. Oh, no; not at all; he would not owe the Government anything.

Mr. QUIN. You mean that is just what it would theoretically bring to the Government?

Mr. COOPER. No; no theory at all; it is a practical matter. The taxpayers would have to pay this $1,275,000,000 of real money into the United States Treasury because Mr. Ford's payments did not meet the costs to the Treasury of the properties leased by that amount.

Mr. QUIN. Mr. Eliot—and no doubt you are familiar with his work—said that if 1 cent were invested on the 1st day of January A. D. 1, drawing 6 per cent interest per annum, compounded every year, up to January 1, 1895, would have amounted to $8,497,840,000; then we have lost all that, have we not?

Mr. COOPER. Nothing like that at all.

Mr. GARRETT. In response to a question asked of you you said that if coal continues to go up, at the end of this 100-year period the lease would be worth a fabulous sum.

Mr. COOPER. Yes; I would say for the last 50 years of the period.

Mr. GARRETT. But at the end of the 50 years——

Mr. COOPER (interposing). It all goes back to the Government.

Mr. GARRETT. Then the Government would have this property that had been brought up to a high state of development?

Mr. COOPER. And would have great value.

Mr. GARRETT. It would have great value to the Government?

Mr. COOPER. It would have great value to the Government.

Mr. GREENE. In making that answer have you taken into consideration the fact that one of the propositions submitted by Mr. Ford is that whatever disposition the Government may seek to make of this property at the end of the 100-year lease Mr. Ford's heirs or assigns or the company that represents them shall have a perpetual right to the power.

Mr. COOPER. I did not know that they had a perpetual right to the power, I thought they had a perpetual preference right.

Mr. GREENE. That is the point in contention, but the language was interpreted by some to give them a perpetual right to take the power at reasonable rates.

Mr. COOPER. I think that may be so, but I am not a lawyer, and I do not want to get into that end of it.

Mr. STOLL. In reference to the question I asked you a while ago when I said the Government was not in the business of lending money, I meant that was not their business; that is, lending any surplus money they might have. Of course, it is true they do have arrangements for lending money to farmers, based on farm security. I meant any surplus money.

Mr. COOPER. Not as bankers per se.

The CHAIRMAN. We will be glad to have you continue your statement, Mr. Cooper.

Mr. COOPER. I thought it would be of interest to the committee to know something about the size of the waterpower that they were considering that was included in the Ford offer, and by size I mean the amount of energy covered by the lease. To estimate the quantity of power that will be available during the term of this lease is a very difficult question for any engineer to solve for the reason that undoubtedly, beginning at once and continuing for many years, there will be created in the valley of the Tennessee above these dams numerous storages which will greatly increase the value of these water powers. In my estimates I am now about to quote to you I have taken no account of that because I do not want to get into the realm of conjecture. I am only quoting from absolute measurements of existing conditions which I have made through my own organization, and therefore, in so far as that is worth anything it is authoritative, as far as I am concerned.

I find that the annual production of energy from these two dams will be 3,883,000,000 kilowatt hours. That does not mean anything to you or to me, because you can not comprehend it, or I can not at least, but it is the equivalent of 517,000 horsepower, 8,000 hours a year, which is about the current maximum of continuous use of power; 517,000 horsepower is the amount of power that 3,000,000 people normally use in commercial life. Perhaps that will give you some idea of how big the power is which is being talked about here; 517,000 horsepower will save about 5,000,000 tons of coal a year.

Passing from that statement, and keeping that in mind, I have made an estimate which represents an endeavor on my part to carefully and conservatively estimate what Mr. Ford's annual expenses will be when these two dams are completely in commission, in that way enabling us to find out how much power is to cost Mr. Ford under his proposed contract. If that has all been brought out here before I do not think I ought to take your time to talk about it, but if it has not been brought out I think it would be a good thing for you to know now.

The CHAIRMAN. I think we would like to have your view of the matter, at least.

Mr. COOPER. If you will turn to page 8, we can consider statements Nos. 2 and 3 together. I find, and this estimate is based upon practical experience, that a careful interpretation of Mr. Ford's proposed contract shows that his annual expenses or operating costs when dams Nos. 2 and 3 are finished, would be $3,622,000 a year. That, of course, will include the $2,000,000 lease money he will have to pay, and I have included taxes at the rate of $765,000 a year, which is considerably less than ordinary water powers in the United States are now paying.

Mr. CROWTHER. May I interrupt to ask if the Alabama law exempting concerns for 10 years is still in force; that is, against power companies?

Mr. COOPER. I do not know; if it is, it ought not to be, in my opinion.

The CHAIRMAN. Mr. Martin, of the Alabama Power Co., is in the audience. Can he tell us about that?

Mr. MARTIN. That law is still in force and exempts the property, business, and franchises of companies engaged in the development of hydroelectric energy for a period of 10 years after the beginning of construction.

Mr. CROWTHER. Would that apply if there was any departure from merely primary production of that power, if there was any development considered or premeditated, if there was any subsidiary business in connection with it. Take, for instance, the fertilizer business. Would they still come under that exemption, or would it apply only to the development of hydroelectric power.

Mr. MARTIN. The statute, as it is to-day, provides that the property, business, and franchise of any person, firm, or corporation who may develop hydroelectric power is exempt for a period of 10 years after the construction. If you will examine section 2069 of the code of Alabama of 1907 you will find the full statute. It is only about 15 or 20 lines.

Mr. CROWTHER. It provides for an exemption for 10 years?

Mr. MARTIN. After the beginning of construction.

Mr. COOPER. In 10 years he would have to pay taxes, and I wanted to take the most generous view of it. I think the figures I have used should be used, and I do not want to be accused of trying to build up some situation that is in the slightest degree unfair from Mr. Ford's standpoint.

Mr. CROWTHER. It is not unfair if it is the law.

Mr. COOPER. I am not trying to build up a situation showing an artificial low price; I am trying to build up a situation that is normal in the business.

Mr. CROWTHER. You are being rather fairer than if you took the other proposition.

Mr. COOPER. Absolutely; I am not taking advantage of any law, or any storage, or anything else.

Mr. CROWTHER. I apologize; but I thought this would be a good place to have that put in the record.

Mr. COOPER. We can go back now to page 6. This is really the meat in the coconut. I will call your attention to the statement marked 6 (a). Figuring the annual expenses, as I have just quoted them, into the amount of energy that I previously showed as being derivable from the dams, we find that Mr. Ford would get his 24-hour power for $10.80 a horsepower per annum, which is about half the current price for this class of power anywhere else in the United States. On the basis of a 60 per cent load factor, by which I mean a power that is used, such as the cotton mills use, and which is the ordinary

commercial power in the South, the power 6 (b) would only cost $7.10 a horsepower, which is a good deal less than half the price in that territory. On secondary power 6 (c) the price would only be $5.40 a horsepower. I would like conclude this part of the statement by saying that as a net result of the proposition, as it is written, Mr. Ford will be getting the cheapest power on the American Continent. Whether Congress wants to give it to him is another matter, and I do not enter into that field at all.

Mr. STOLL. That is predicated on the idea that he can sell or utilize all of this power.

Mr. COOPER. Oh, yes; I think he can.

Mr. STOLL. You think he can. Are there enterprises there now that use that much power?

Mr. COOPER. I will come to that in connection with another statement.

The CHAIRMAN. The Chief of Engineers of the War Department told this committee at the beginning of these hearings that along in 1921 he was instructed by the Secretary of War to invite bids from the men who might be interested in continuing the work at Muscle Shoals. He told some 8, 10, or 12 men of this country who were engaged in building up plants of that kind to make some offer to the War Department or to the Secretary of War for the utilization of the plant at Muscle Shoals, and the only favorable reply he received from anybody was the reply from Mr. Ford. They all seemed to be afraid of the thing, but Mr. Ford really did make an offer. Then the Secretary of War wrote Mr. Ford that his offer did not even contemplate interest on the great expense of building Dam No. 2, or completing it, and building Dam No. 3. Then Mr. Ford made a subsequent offer which is the offer we have before us. Now, taking your statement of the situation at Muscle Shoals, do you not think it rather remarkable that nobody else in this country was willing to make an offer regarding the plant at Muscle Shoals, except Mr. Ford?

Mr. COOPER. Mr. Ford has more money than anybody else in the United States. I do not think that is very remarkable.

The CHAIRMAN. Of course, he has considerable means; but do you not think there was a risk involved in the proposition? Was he not taking any risks at all?

Mr. COOPER. I do not think so at all. Not at these prices; no.

The CHAIRMAN. You think it was not surprising that all these other men who were already in the business——

Mr. COOPER (interposing). I think if anybody in the business had thought that Congress would take such a kindly view of a price as cheap as his there would have been several fellows bidding.

The CHAIRMAN. We had some exhibits in the hearings showing that quite a number of big corporations handling water power found it could not be worked at all through Congress, and rather sneered at the whole thing.

Mr. COOPER. I have read those statements; I think they were made with a deliberate attempt to bear the market; that is what I think of them all. They were not made in good faith. I want to say that with especial emphasis.

The CHAIRMAN. We respect you for making a courageous statement.

Mr. COOPER. I thank you.

The CHAIRMAN. That is a remarkable view of the situation—that it was done to bear the market.

Mr. FIELDS. Are your statements in the paper you are talking about?

Mr. COOPER. Those are the ones I am talking about specifically. On page 10 you will find the last statement. It shows that if Mr. Ford would pay 4 per cent on the $83,000,000, instead of $50,000,000 (his present offer equals about 2½ per cent on $83,000,000), he would still get the power for a price 20 per cent less than he could anywhere else on the American continent. If I was as rich as Mr. Ford, or half as rich, I would not be trying to pry that other 1½ per cent out of the United States Treasury; I would go down there and take this job and pay 4 per cent on the whole thing.

The details are all shown in this statement, and I do not think it is necessary to take the committee's time in going into the details. I hope I have made myself plain, that if he paid 4 per cent on the $83,000,000, and thereby save the Government $1,275,000,000, he would still have in his possession for 100 years the greatest water power in the South, and at a price that is abnormally cheap.

If there are no questions I only have one or two more statements to make, and then I will be through.

Mr. STOLL. You said you would state how he could utilize that power.

Mr. COOPER. I am coming to that.

The CHAIRMAN. The flowage rights between Dam No. 2 and Dam No. 3 have been estimated in statements made to the committee at from $1,500,000 to $2,000,000. Do I understand you to say that you think, instead of asking the Government to include those lands in the purchase rights, he should be willing to pay 4 per cent interest on the amount the Government is to lay out for that land?

Mr. COOPER. Not only that, but all the money the Government has spent up to date, including $16,000,000 which has been spent on Dam No. 2 and on which there is lost interest. Mr. Ford would still have a most wonderfully valuable water power.

I think if there is any value in any statement I have made to this committee, to-day, it is this statement I have just now made to you. You will find, if you go to the bottom of it, it is the truth, too.

Mr. PARKER. I think your statement shows he gets his horsepower at a very cheap price compared with present rates. I understand you to say horsepower rates are likely to rise from year to year.

Mr. COOPER. Very much so.

Mr. MORIN. It is your judgment that the flowage rights the Government will acquire under the Ford offer could be purchased at $1,350,000?

Mr. COOPER. I do not think so; because in all the history of flowage rights there has never been one of those estimates which has been right.

Mr. MORIN. What would be the amount?

Mr. COOPER. If I was going to guess at it I would double it. At the Keokuk Dam I estimated the overflow lands at $1,500,000 and some thousand dollars, and it cost us $4,500,000. I had 300 options on all kinds of land to guide us in that estimate.

The CHAIRMAN. The United States Government was not buying that land.

Mr. COOPER. No; easy people were buying it.

The CHAIRMAN. But the United States Government would be buying this land. You know how prices rise when the Government wants to buy anything.

Mr. COOPER. Yes; it is a very bad situation.

Mr. MORIN. Would it be necessary for the United States Government to acquire land for railway and terminal connections there?

Mr. COOPER. In any of these places?

Mr. MORIN. Yes.

Mr. COOPER. I do not think so.

Mr. FIELDS. Would you charge any part of the flowage to navigation?

Mr. COOPER. Not until there was some navigation to charge it to.

Mr. FIELDS. If the dams are completed?

Mr. COOPER. You have to complete Dam No. 1.

Mr. FIELDS. If Dam No. 1 was completed there would be navigation?

Mr. COOPER. Yes; up to end of the pool back of Dam No. 3.

Mr. FIELDS. Then would you charge anything?

Mr. COOPER. No; not unless there was some real navigation on the river. I can tell you a very short story, but it is a very interesting one, and I think this committee ought to know it. At Keokuk we spent $2,000,000 in the construction of a lock and dry dock, which we gave to the Government. The interest on the $2,000,000 would buy all of the boats that run up and down there, and if we burned up the boats and the cargoes they carried we would still have a handsome profit. I had a delectable experience with the master of one of those boats on the Mississippi River. He took me down onto his boat and showed me a cargo he was hauling from St. Louis up to St. Paul and back to St. Louis, and thus show some freight movement, so they could come down here and get some more money. I saw that cargo myself, and the captain showed it to me.

The CHAIRMAN. You mean come to Washington?

Mr. COOPER. Yes; the Upper Mississippi River Improvement Association.

The CHAIRMAN. They wanted to show——

Mr. COOPER (interposing). A tremendous business.

The CHAIRMAN. So as to mulct the Treasury of the United States?

Mr. COOPER. Absolutely.

The CHAIRMAN. The men who are engaged in that business are traitors to their country.

Mr. COOPER. Of course they are.

Mr. GARRETT. I understood you to say you thought Mr. Ford should pay interest on $83,175,000. That includes the original cost also, and added to that the two or three million dollars for flowage rights.

Mr. COOPER. The interest on it?

Mr. GARRETT. The interest on all of it.

Mr. COOPER. Yes.

Mr. GARRETT. You think if this proposition of Mr. Ford should not be accepted, and another proposition should come to the committee, whoever makes those propositions should be governed by the same rules?

Mr. COOPER. Absolutely. I have a statement to make which is not an opinion, but is a statement of fact also, but I think will be a surprise to this committee, and it is something that ought to be, and I hope will get into the newspapers, and get down South around Florence, so that when I go down there the next time they will not shoot me.

I am very well aware of the tremendous desire of the people in the South, especially those in northern Alabama, for the consummation of Mr. Ford's proposals. They have good reason to want it, and I do not blame them; I would want it, too, if I were there.

As I understand Mr. Ford's proposal, it is a proposal on his part to go into various lines of chemical work. He has said that in public print in many places. I doubt exceedingly the wisdom, from the standpoint of the public interest in the South, of taking out of the water-power reserves in the South so great an amount as 517,000 horsepower. I think the time will very soon come, if this is consummated, that the very people in the South who are clamoring for the acceptance of this proposal will be crying for its abrogation. That opinion would not be worth anything if I could not point to something specific to back it up.

It just so happens that 20 years ago at Niagara Falls they started to build what is now 400,000 horsepower. At that time they could not get a market for it, so they took in the chemical people. The chemical people and the water-power people tied up and built up a great industry, all in chemistry. But it is a fact that this water power at Niagara Falls did not even get as far as Buffalo, 23 miles away. And two years ago Buffalo had to pay for the operation of a steam plant at a cost of $10,000,000, and that city is within 23 miles of the greatest water power in the world, so called.

Now, then, since the last year there has been a widely concerted movement all over the State of New York, represented by counties, by numerous mayors, and chambers of commerce, and all kinds of barn-stormers at Albany, to get the power situation at Niagara Falls corrected, and at this moment, this very moment, they are passing legislation that is absolutely conclusive and compelling, so that the power at Niagara Falls can be distributed all over the country, and no more of it go into chemistry. Gov. Miller of New York has sent a message to the legislature on that subject. The water-power commission has recommended that it should be done. I do not want to be understood as saying that these chemical industries at Niagara Falls were a curse to the country. Far be it from me to say that. They actually accomplished a great good, and the country would have been in a dickens of shape in this war without all of them. But there is a limit to which any more water power should be assigned to chemistry. The whole State of New York, and all these people up there, after only 20 years of experience with the chemical industries, are storming the legislators to stop the use of power in chemistry in a territory that is buying coal for power use. Chemical industries do not use very much labor. Take the Aluminum Co.

Everybody knows that they are a tremendously large company and very successful, and the Lord only knows what we would have done in the last war without them. They have 150,000 horsepower in the aluminum works at Messina, and the town is not much bigger now than it was 20 years ago. What they need to do in the South is this: The South needs cheap, reliable energy to be distributed all over the country, for the assistance of a large territory. Secretary Lane was the author of the movement to investigate the superpower zone question. The quickest way to get a superpower zone in the South is to have the assistance that can only come from these two powers at Muscle Shoals. If you put these two powers at Muscle Shoals away into chemistry it will be the same thing as taking a vertebra out of a man; there is nothing to fasten the ribs to. You would not have anything to start a superpower zone with at all. When these people get over their present spell they will see very plainly the errors in their present enthusiasm.

I am not going to plead for the rejection of Mr. Ford's proposal at all, but my conscience requires that I make the foregoing statements, after which I do

not care what Congress does. I think it would be a tremendous calamity to the South if the greatest water power they have got should be taken out of the field of public utility for 100 years.

The only other question I have in my mind is this—and on that I can not speak with definiteness—that the value of this whole great mass of energy at these two dams is not possible to estimate, because no one can tell how much the price of coal is going up. We can very readily see where at the end of 50 years of this lease that this power would be worth more than twice what it is now, due to the increased cost of coal.

Now, finally, I want to say I can not understand how anybody would want to take this great property upon which the Government has spent around $33,000,000, which is admittedly the greatest water power in the South, and put it where no representative of the public could really regulate the price and regulate those to whom it shall be delivered, and the class of service, and all that concerns the public interest. I really think if a water-power man had come down here and had made the same proposition Mr. Ford has made he would never have lived to get home. It is an astounding proposition.

Mr. MORIN. If we should decide to accept Mr. Ford's proposition, what do you think should be the limit of the term of the lease?

Mr. COOPER. Fifty years.

Mr. MORIN. That is the maximum?

Mr. COOPER. Yes.

Mr. MORIN. You do not think his proposition should be accepted?

Mr. COOPER. Not in its present terms. I think Mr. Ford is bright enough and his men around him are bright enough so that they will accept all of these suggestions I have made here to-day before they will let this property go.

Mr. MORIN. Do you think if the Government should complete those works itself they could then find somebody to operate the works for 50 years to better advantage than by accepting Mr. Ford's proposal?

Mr. COOPER. You mean the power plant?

Mr. MORIN. Yes.

Mr. COOPER. I do not believe I quite understand your question.

Mr. MORIN. If the Government, after finishing this work itself, would be able to get some concern to take over this proposition at Muscle Shoals and operate it to better advantage than by accepting Mr. Ford's proposition; that is the question?

Mr. COOPER. Yes; and right here I would like to say one thing about fertilizers, if the committee is not tired. This is an entirely new angle of it. I have been sitting in on fertilizer conferences for 10 years. I was sent for by the British Government 10 years ago to go to Egypt and sit in on a conference in connection with a fertilizer plant for the Nile Valley. As a designer of water powers I have been seeking successful fertilizers as a justification for building water powers that have not any other market. During all these 10 years I have discovered that the discoveries themselves are outrunning anybody's willingness to go beyond a certain point, because the state of the art is very new; that is to say, they do not know much about it, so far as I can find out—not any of them.

When we realize that chemistry is at the beginning of its development, and electricity also, I think it is a perfectly wild statement to expect that 110,000 tons of ammonium nitrate is the way out. That I know is not so.

I happen to know of a tremendous new fertilizer program that is coming to America from Europe that will only take a third of the power that this ammonium nitrate requires. I am told on authority that does not go back to any fertilizer company at all but through other circles that it will be a revelation and a revolution in the fertilizer business, and I do not see how you would be willing or anxious to tie down to any particular thing, especially when all of the processes of nitrogen recovery and all these other recoveries are admittedly by all scientists in a very inefficient state of development.

Mr. MORIN. Do you think that Mr. Ford could produce fertilizer at prices to compete with other concerns?

Mr. COOPER. I do not believe my judgment on that is worth anything; I do not know.

Mr. HULL. Mr. Cooper, we do not tie ourselves down to any particular development along the fertilizer line if we accept Mr. Ford's proposition; it is open.

Mr. COOPER. I can not see where Mr. Ford's promise is to do anything. He just promises to investigate. There are a great many different men investigating fertilizer now, and surely they have not any such proposition as this behind them.

Mr. HULL. He promises to investigate and to have that investigation controlled by an independent commission to work out the best way of producing fertilizer. If, as you say, something new comes along, they unquestionably would undertake to take that up.

Mr. COOPER. That is a matter that is entirely in the wisdom of Congress; it is not an engineering question.

Mr. HULL. You do not care to speak about that feature of it?

Mr. COOPER. My opinion is not worth anything on that.

Mr. HULL. If it would cheapen fertilizer material it would be worth all it is costing the Government, would it not?

Mr. COOPER. No, I don't think so. According to some of the previous testimony here to-day I think you will have to pass a law compelling the farmers to use it in many cases.

Mr. HULL. There has been some question as to the difference in the cost of finishing the dams. Some people have claimed that Mr. Ford could finish them cheaper than the Government. You are fairly conversant with the Government operations down there, so far. Have they been extravagant?

Mr. COOPER. No.

Mr. HULL. Do you think the Government could finish that work with their present organization, building up the same organization that they had, and finish it as cheaply as anyone else?

Mr. COOPER. Taking everything into consideration, I would say yes.

Mr. HULL. I heard you say it had cost the Government $33,000,000 up to the present time. I do not quite understand that. I thought the river development had cost $30,000,000.

Mr. COOPER. That takes in a lot of other items.

Mr. HULL. The flowage rights?

Mr. COOPER. Yes, and loss of interest up to date.

Mr. HULL. That is all water over the wheel.

Mr. COOPER. Yes, but in private life we have to take care of it.

Mr. HULL. The Government has not taken care of what they got.

Mr. COOPER. I think the Government will have to take care of what they have been letting run away, pretty soon, or we will all be busted.

Mr. HULL. Summing it up, you think the Government ought to finish this work unless we can get a better proposition; is that your view?

Mr. COOPER. Yes.

Mr. HULL. Suppose you were a member of this committee, trying to conserve the Government's interest and save money as best we may, and you were satisfied that we could not get the money to finish this up, and this thing was standing down there, and a man came along like Henry Ford and offered to finish it up, and he was the only one who did make such an offer. What would you do then?

Mr. COOPER. I do not believe I would be bothered about that, because one of your premises is wrong in connection with that.

Mr. HULL. Which one?

Mr. COOPER. Your premise that you cannot get the money.

Mr. HULL. We tried very hard.

Mr. COOPER. I mean Government money.

Mr. HULL. We tried our best a year ago.

Mr. COOPER. I think you could get it now.

Mr. HULL. We did not get it through Congress, and we tried the best we could to get it through Congress. But there is one question I would like to have your opinion on as an engineer; that is in regard to the Gorgas plant. According to Mr. Ford's proposition we have to buy the Gorgas plant. Is that necessary for the completion of his project?

Mr. COOPER. No, I do not think so. I do not know enough about Mr. Ford's plans to really answer that question.

Mr. HULL. Is the perpetual-preference plan that Mr. Ford puts in there unfair?

Mr. COOPER. The 100-year business?

Mr. HULL. No; the preference right at the end of the lease.

Mr. COOPER. I think so.

Mr. HULL. That is simply a preference to him?

Mr. COOPER. I know, but you do not know anything about what kind of people the Fords will be 100 years from now or 50 years from now.

Mr. HULL. That means that having the property there, and having developed it, if two companies offer the same thing, the Ford company should be given the preference. Why is that unfair? I understand that some people say it is unfair, but I can not see why it is unfair.

Mr. COOPER. Because you can never compel anybody in the United States to do anything that they ought to do unless they really want to, by law or in any other way.

Mr. HULL. It would be up to Congress.

Mr. COOPER. I know, but you can pass all the laws you want to, and if a fellow did not want to do right he would not do it. They always get out of it. You have got to have the will to do right before you really do right.

Mr. HULL. If you rent a farm to a man and put in a provision in the lease that at the end of the lease period you will give him the preference in re-leasing it, that is not unfair, is it?

Mr. COOPER. That is not an engineering question, and I do not want to discuss it any further.

The CHAIRMAN. We have a case now before the whole country of a law passed by Congress and ratified by the States, but the people do not seem to like the law, and they break it. That is the prohibition law.

Mr. FIELDS. And that is getting better.

Mr. MILLER. What is the horsepower at the Keokuk Dam?

Mr. COOPER. We are now generating a maximum each day of about 165,000 horsepower.

Mr. MILLER. And the cost of the Keokuk Dam was how much?

Mr. COOPER. About $24,000,000.

Mr. MILLER. That was built in what year?

Mr. COOPER. It was finished in 1912.

Mr. MILLER. At the time the dam was completed was there a demand for the maximum amount; that is, at the Keokuk Dam?

Mr. COOPER. No.

Mr. MILLER. Is there a demand for the maximum amount now?

Mr. COOPER. We are entirely sold out. I happen to be the vice president of the company.

Mr. MILLER. How do the rates per kilowatt hour at the Keokuk Dam now compare with the rates you got when the power was first developed?

Mr. COOPER. About 25 per cent higher.

Mr. MILLER. How long were you at Muscle Shoals?

Mr. COOPER. The first time, about two months.

Mr. MILLER. Are you acquainted with what is known as the prospective Dam No. 3?

Mr. COOPER. Yes.

Mr. MILLER. How does the size of that dam—that is, the dimensions—compare with Dam No. 2?

Mr. COOPER. It is somewhat longer and much less in height.

Mr. MILLER. Dam No. 2 has a drop of about how much?

Mr. COOPER. About 94 feet.

Mr. MILLER. Over the gates?

Mr. COOPER. Yes; the difference between the two levels is about 95 feet.

Mr. MILLER. What is Dam No. 3?

Mr. COOPER. Thirty-eight feet.

Mr. MILLER. That fall of 38 feet at Dam No. 3 backs the water up how far?

Mr. COOPER. I do not know, but I think about 60 miles.

Mr. MILLER. You back it up by the pool at Dam No. 2 only about 14 miles or something like that?

Mr. COOPER. Something like that.

The CHAIRMAN. I think the record shows that the distance the water is backed up by No. 3 Dam is 63 miles.

Mr. FIELDS. You say that you recommend that the Government complete the dam?

Mr. COOPER. In the absence of a better proposition than Mr. Ford's; yes. I understand the Alabama Power Co. has a project which is to be submitted to you, but I do not know anything about that except what I see in the papers.

Mr. FIELDS. It is your opinion that the dam should be completed?

Mr. COOPER. Unqualifiedly yes.

Mr. FIELDS. Then, in the event Mr. Ford's proposition should not be accepted, and a better proposition or a proposition that Congress would accept should not be offered what would you recommend that we do with the dam?

Mr. COOPER. I would get all the facts before each Congressman and each Senator, and I would be mighty sure they actually knew what the facts were, and I am sure they would vote for the proposition. The trouble with you, dear gentlemen, is that you have so much to do that you do not get all the facts on these things.

Mr. FIELDS. You would not recommend the operation by the Government?

Mr. COOPER. No, sir.

Mr. QUIN. Congress passed on that question last February, and they killed it.

Mr. COOPER. Do you not think Congress knows a lot more about that now than they did at that time? I know something about the things that killed it, and I do not think they are around here now.

Mr. QUIN. I am simply telling you what the record shows.

Mr. COOPER. I know what the record shows and I know what happened at that time, too.

Mr. QUIN. They did not let it go through.

Mr. COOPER. No; it was a fluke.

Mr. QUIN. You stated that the Government did not waste any money down there, that the work was done economically. There was a war investigating committee—one of those smelling committees—who investigated that proposition, and they reported great extravagancies on that work.

Mr. COOPER. I do not think they did with reference to the dam. If they did they made a mistake.

Mr. QUIN. There was not any money wasted in the construction?

Mr. COOPER. No; I do not think there was in that sense.

Mr. QUIN. I am glad to hear that. I hope Congress will realize that. You say Mr. Ford would have the cheapest power in the United States?

Mr. COOPER. Yes.

Mr. QUIN. About how much per cent cheaper than any other power?

Mr. COOPER. If he paid 4 per cent on the total cost that would be 20 per cent less. On his present terms it is about half the price, and I can not see any earthly excuse for his having it at that price.

Mr. QUIN. With the extraordinarily cheap power he would have he would be able to make fertilizer and sell it cheaply to the farmers?

Mr. COOPER. If I correctly interpret what I have been listening to in the last five or six years, the price of power has a very small place in the total cost of fertilizer that the farmer buys, and under these new processes it would be a very small amount, and the farmer would never know the difference.

Mr. QUIN. With all this high cost of power in coal and transportation on coal, do you mean to say that water power at this very cheap rate would not enable him to make fertilizer cheaper that the steam factory can make it?

Mr. COOPER. Some of the new processes do not require much if any water power at all.

Mr. QUIN. If they come into use and Ford utilizes them, can be not make fertilizers out of any thing they can make it out of?

Mr. COOPER. He is a miracle man with the Ford car, but he can not do everything I believe.

Mr. QUIN. He puts out a five-passenger touring car that runs on the finest avenue in the United States, or on a cow path.

Mr. COOPER. I have one of them myself, so I know all about it.

Mr. QUIN. Is it not reasonable to presume that his expert men would be able to make use of this new method of making this fertilizer?

Mr. COOPER. Not do that, and do the other things they are trying to do. But I do not care whether you give it to him.

Mr. QUIN. You said the farmers would not use the fertilizer unless a law was passed to make them do it. Why not?

Mr. COOPER. I do not know; I do not understand farmers very well. The testimony here to-day indicates that farmers are slow to use fertilizers. I have heard a lot of them say they would not use it.

Mr. QUIN. You have not talked to the kind of farmers I know.

Mr. FISHER. Can we count on you to offer criticisms of the other offers made for Muscle Shoals?

Mr. COOPER. If you can stand it, I can.

Mr. FISHER. Have you examined the new offer which the newspapers state the Alabama Power Co. has made?

Mr. COOPER. No.

Mr. FISHER. I hope we will have the pleasure of a criticism from you on that if it is presented.

Mr. COOPER. I thank you.

Mr. STOLL. You expressed the opinion that Congress did not understand the proposition when they refused to complete dam No. 2. I suppose there were very few engineers in Congress at that time, and that there are very few in Congress at this time. Do you think it will help Members of Congress to see this plant? Do you think it will help them to come to a conclusion?

Mr. COOPER. Yes.

Mr. STOLL. You think it would be advisable to look at it?

Mr. COOPER. In 20 years I have never found a Congressman who would not do the normal thing if you get the facts down his throat.

Mr. STOLL. Under the figures in your table here these two dams would generate 850,000 horsepower. Can Mr. Ford utilize that himself in manufacturing?

Mr. COOPER. My own guess is—and this is the first time I have guessed for you to-day—that he is not going to make much fertilizer, but he is going to make aluminum for Ford cars.

Mr. STOLL. Can he use the 850,000 horsepower he will get there?

Mr. COOPER. Can he use it?

Mr. STOLL. Yes.

Mr. COOPER. I do not know.

Mr. STOLL. Is there any place there where he can sell it?

Mr. COOPER. Under present-day transmission if he goes at it in a normal way he can sell it to the public.

Mr. STOLL. Where?

Mr. COOPER. All around through the South.

Mr. STOLL. There are very few large cities around there.

Mr. COOPER. Cheap power makes a demand for more power always.

Mr. STOLL. How far can you send this power?

Mr. COOPER. More than 400 miles.

Mr. STOLL. That is an undeveloped country.

Mr. COOPER. Yes; I have been down there.

Mr. STOLL. Do you think you could sell that much power?

Mr. COOPER. Inside of 15 years; not in less time than that.

Mr. STOLL. That is problematical; he will have to find a market for his power. There is no market there now.

Mr. COOPER. If he carries out his aluminum project, which I think he has in mind, he is not going to have to look for a very large market.

Mr. STOLL. In making up your figures you figured on his getting a price for all this power.

Mr. COOPER. I figured on what it would cost him. I assumed he would sell it for more, else he would not make any money.

Mr. STOLL. That is the presumption, of course. He would not produce power unless he could sell it, of course.

Mr. COOPER. Many men have done it. I imagine he would follow the normal course. Everybody has to originally produce more power than he can sell and grow a market afterwards.

Mr. STOLL. Is there any way to store it?

Mr. COOPER. No.

Mr. STOLL. It would be dead loss unless he could dispose of it?

Mr. COOPER. Yes.

Mr. STOLL. In figuring his profits, is it not a rather wild guess to say he would make all this money, unless he could dispose of his current?

Mr. COOPER. No; I do not think so, because the price is so very low it will attract a market; that is the point. He can get a chemical market for it.

Mr. STOLL. Unless he does sell it, your figures fall down.

Mr. COOPER. Until he does sell it, the figures fall down. I have not said it was a profit at all; I did not use the word profit at all. None of these figures refer to a profit.

Mr. STOLL. You made the statement that he would get cheap power.

Mr. COOPER. You know cheap power does not mean that you have a profit out of it.

Mr. STOLL. He is too good a business man to spend that much money and develop 850,000 horsepower unless he could dispose of it in some way.

Mr. COOPER. He certainly has plans to dispose of it, but he does not reveal his plans.

Mr. STOLL. Do you not think the reason he wants a hundred-year lease is because there is going to be a gradual development?

Mr. COOPER. No; there is nothing like that.

Mr. STOLL. You never talked with Mr. Ford?

Mr. COOPER. No.

Mr. STOLL. You do not know what his plans are?

Mr. COOPER. No. But I know how fast a market for power grows. When we started 20 years ago in the Niagara Falls district you could hardly give away power, but to-day there is a market for 1,000,000 horsepower.

Mr. STOLL. That is a manufacturing district and is very thickly populated; they have large cities there.

Mr. COOPER. That is an instance of the extraordinary way in which that market has grown. But the market grown there has been created by the parent water-power situation.

Mr. STOLL. Within 400 miles of Muscle Shoals there would not be over a couple of million people.

Mr. COOPER. The statistics of the power business show that one horsepower is used by about five people. If there are 2,000,000 people within the transmission distance of Muscle Shoals, that is 400,000 horsepower.

Mr. STOLL. I do not know that there are 2,000,000 people there; that is guesswork.

Mr. COOPER. My memory is that it is something more than that.

Mr. STOLL. Within a radius of 400 miles of Muscle Shoals you think there would be 2,000,000 people?

Mr. COOPER. I would not say whether it would be 2,000,000.

Mr. HULL. There is just one question I want to ask you along the line of primary and secondary power. There is quite a difference in the two powers, as far as selling the power is concerned?

Mr. COOPER. There is a great difference.

Mr. HULL. Down there you would have a large amount of secondary power compared with your primary power?

Mr. COOPER. About twice as much, at the present time. But that ratio will change when you build your storages.

Mr. HULL. It will gradually change?

Mr. COOPER. And improve greatly.

Mr. HULL. That would be changed by the development of Dam No. 3?

Mr. COOPER. Not much.

Mr. HULL. The power at Niagara Falls and Keokuk is practically all primary power, is it not?

Mr. COOPER. No.

Mr. HULL. How much secondary power do you have at Keokuk?

Mr. COOPER. About half.

Mr. HULL. Can you sell that?

Mr. COOPER. Yes; we have sold all of it, every kilowatt.

Mr. MILLER. I asked this question of a gentleman early in the examination, whether the acquisition of a water power at Muscle Shoals was not the main inducing cause of Mr. Ford's submitting this proposal.

Mr. COOPER. I should think it was; yes, sir.

Mr. PARKER. You spoke of aluminum. How much horsepower would it take to make all the aluminum for the present manufacture of Ford cars?

Mr. COOPER. I am afraid I will not be able to give you a correct answer about that, but my guess is it would be about 250,000 horsepower.

Mr. FIELDS. I understood you to say you are connected with the Keokuk Power Co.?

Mr. COOPER. Yes.

Mr. FIELDS. Are you connected with any other power company?

Mr. COOPER. No.

Mr. FIELDS. Of the United States or Canada?

Mr. COOPER. No; just as an engineer.

Mr. FIELDS. What companies are you connected with as an engineer?

Mr. COOPER. With the Niagara, Lockport & Ontario Co., at Niagara Falls, and the Frontier Corporation, of New York. I am also connected with a few other power corporations.

Mr. FIELDS. Is this Niagara Falls concern you mentioned connected with the American Cyanamid Co.?

Mr. COOPER. No.

The CHAIRMAN. We are very much obliged to you for your very instructive and enlightening statement, Mr. Cooper.

(Thereupon, at 5 o'clock p. m., the committee adjourned to meet Monday, February 20, 1922, at 10.30 o'clock.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES.
Friday, February 17, 1922.

The committee met, pursuant to recess, at 2 o'clock p. m.

STATEMENT OF MR. THEODORE SWANN, PRESIDENT FEDERAL PHOSPHORUS CO., BIRMINGHAM, ALA.

The CHAIRMAN. Mr. Swann, will you please state your name and your present occupation, and residence.

Mr. SWANN. Theodore Swann, president, Federal Phosphorus Co., Birmingham, Ala.

The CHAIRMAN, Mr. Swann, you are an engineer.

Mr. SWANN. No, sir.

The CHAIRMAN. But you have studied the situation at Muscle Shoals and along the Tennessee River for a considerable time?

Mr. SWANN. Yes, sir.

The CHAIRMAN. You claim, or your friends claim for you, that you know nearly as much about the situation down there as anybody. I would like you to state to the committee in your own way just what the condition is, and what the situation is at Muscle Shoals. You will kindly proceed in your own way.

Mr. SWANN. My first connection with Muscle Shoals was when I was sales manager of the Alabama Power Co. in 1913, at which time in my position I collected data as to the possible market for power, should they develop the property which they at that time owned.

At a later date, I started an electric-furnace plant for the production of ferromanganese, in February, 1917, for the purpose of utilizing secondary power, of which the company had a large quantity. I then resigned my position with the Alabama Power Co.

I personally own the controlling interest in this company as well as the Federal Phosphorus Co. We engaged a staff——

The CHAIRMAN (interposing). What do you mean by "this company?"

Mr. SWANN. The Southern Manganese Corporation, which was the company that produced ferromanganese.

We engaged the best technical staff we could find to develop something for the electric furnace to do with secondary power, as the ferromanganese market was being well supplied prior to the armistice; in fact, there was a surplus in this country as was proven by the quick drop in price after November 11th.

The CHAIRMAN. You mean November 11, 1918?

Mr. SWANN. Yes.

The CHAIRMAN. That is the day on which the armistice was signed.

Mr. SWANN. Yes.

The CHAIRMAN. Or went into effect.

Mr. SWANN. Yes. In fact, in New York on the day of the premature announcement, while I was operating eight furnaces on ferromanganese, I wired my plant to shut down three furnaces, knowing that there was too much ferromanganese in the country.

I was in touch all along with the War Industries Board, and Mr. C. H. McDowell, who was the director of the chemical section, suggested that we make potash.

We continued some experiments on the utilization of Georgia shales for producing potash, since our supply was cut off from Germany at that time, and the western fields had not been developed.

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We did produce some potash by volatilizing it in the electric furnace; that is, we charged into the furnace a potash-bearing shale, and we produced a product as high as 40 per cent potash, which, at the prices then prevailing, would have been a very profitable business.

A little later, Mr. McDowell suggested the Government would need more phosphorus for smoke-screen and other war purposes, and we took a contract to build a plant for the Government on the basis of cost plus $1 for the production of large tonnage of phosphorus.

We had not proceeded very far with the plans when the armistice was signed. We, of course, were interested in phosphorus from our studies at that time, and it was further suggested that phosphoric acid could be made in the electric furnace.

The Bureau of Soils had conducted some experiments at their Arlington Farm and later at Hoboken, but only in a limited way with a small furnace. They deserve much credit for their work.

The War Industries Board arranged the loan of one of the representatives of the Bureau of Soils, Mr. J. N. Carothers, who came down to assist on behalf of the Government in getting the plant ready for the production of phosphorus. Later, I secured the services of Mr. Carothers, who came with us to join in this development.

Very briefly speaking, we had a 20,000 kilowatt plant, which is about one-fourth as large; in fact, it is slightly more than one-fourth as large as the Muscle Shoals plant. We did not know what we were going to do with it. We could not continue the manufacture of ferromanganese because the English had come into competition and reduced the price to a very low figure. It could be made in the blast furnace, and there is absolutely no excuse for making anything in an electric furnace unless you can make it of better grade or higher quality than in the blast furnace.

Knowing that, we made studies of every alloy that had been made in the electric furnace, searching for the location of raw materials, the principal points of manufacture, the principal markets, and when we came to phosphate rock, since we are located substantially midway between the Tennessee and Florida deposits, and as the United States has more than one-half of the world's supply of phosphate rock, we decided to confine our experiments to something to do with phosphate rock in order that we might salvage our war-time plant and make it of some use and value; otherwise, we would have to scrap it.

I might say we really had a prize offered us. We built this plant for a total of about $800,000. It would not scrap for $150,000. Therefore, if we could find something it could do, we could make it work its cost or a prize of $650,000 was offered to ourselves if we found something with which to utilize it.

We first started in the production of ferrophosphorus, to learn something of the peculiarities of working phosphate rock.

The experiments conducted by the Bureau of Soils were of value to us but they proved there was considerable technical difficulty in the handling of phosphate rock.

At a later date, we made phosphoric acid; in fact, our first phosphoric acid was made about 2½ years ago. Then we tried the combining of potash-bearing shale from Georgia in the electric furnace with phosphate rock to produce a potassium phosphate.

I might briefly describe the process for making phosphoric acid in the electric furnace. Our furnaces were of the open-top rectangular type, known as the carbide-type furnace, exactly like, except smaller, than the ones you have at Muscle Shoals nitrate plant No. 2.

The capacity of each of our furnaces was 4,000 horsepower, which removed them, of course, from the experimental class.

We charged into the electric furnace, phosphate rock from Tennessee, which is the lump rock, or the Florida pebble rock as our source of phosphorus; then the silica rock which is an acid to flux the excess of a base or lime that is present in the phosphate rock, coke braize as a reducing agent—not the ordinary lump coke, but a cheaper material, coke braise, and then some cast-iron borings. Our purpose in adding the cast-iron borings was to improve the operating condition of the furnace and make some ferrophosphorus which really was our bread and butter while we were developing this process as we had lost a very large sum of money on the decline of manganese, which dropped in a short period of time from $280 a ton to $95 a ton; incidentally, one of

the first of the commercial wars, in which the English said they were going to take back the market that they had in this country—and they did.

The phosphorus is evolved as phosphorus by the heat of the electric arc or furnace. When it comes in contact with air in an inclosed furnace, it turns to phosphorus pentoxide, similar to the form in which they use the phosphorus for smoke-screen work. It is a dense, heavy, white fume. That is carried over in the gases and passed through a condenser and precipitator. Being hydroscopic or picking up water easily, strange as it may seem, it comes out of the electric furnace as a liquid. The liquid phosphoric acid that we collect is approximately 65 per cent P_2O_5, which is four times the strength of ordinary acid phosphate as produced by the sulphuric-acid method.

Now, once we obtained liquid phosphoric acid of this high degree of purity and high strength, we naturally sought first the markets that would bring us the best price, which are known as the food-grade markets.

By a simple process of purification, due to the fact that we have a pure acid to start on, we were able to obtain an acid that is suitable in the East for soft drinks and is mixed with either lime or ammonia or soda into a water softener, a boiler compound, or rust-proof compound, or for use by the peroxide blondes by way of the hydrogen-peroxide. There are very many uses for phosphoric acid, and sugar refining is one of them.

We developed that trade and have a fair share of the total business of the United States but always had in mind the fertilizer industry.

Roughly speaking, 25,000 horsepower would produce enough of the high-grade acid to supply the entire requirements of the United States, but to take care of the fertilizer industry on, say, the average of the past 10 years, would take from 400,000 to 600,000 horsepower.

Having once been in the power business, and knowing something of that end of the proposition, I always had in mind trying to find something that could utilize secondary power, knowing that it could be obtained cheap in the South, since the entire Appalachian section is one of seasonal stream flow. The fertilizer business is seasonal, so the two fit in together very well.

The 65 per cent liquid phosphoric acid is used to treat or acidulate, which is the trade name, ground phosphate rock, and a triple superphosphate is produced containing 48 per cent phosphoric acid, or three times that of ordinary phosphate. The ordinary acid phosphate is produced by grinding phosphate rock, treating it with sulphuric acid to make available the phosphoric acid present in the rock.

By our process we first obtain a liquid phosphoric acid out of the rock and then use that element of paint food to liberate more plant food from the raw rock.

We also can take liquid phosphoric acid and fix ammonia gas from the by-product coke ovens into an ammonium phosphate, or take the liquid and fix the gaseous element and collect it as a salt available for use as a fertilizer.

This led up to another interesting experiment in connection with the production of potash and phosphoric acid. In the production of phosphoric acid we charge into the furnace a material for fluxing silica rock, in the production of potash the base being an acid with charged lime. So the natural question that would occur would be, why not charge enough potash-bearing shale into the furnace to satisfy the requirements and produce a potassium phosphate? And on September 12, 1919, we produced this sample of K_2O or potash 7.94, P_2O_5 or phosphoric acid, 66.7. That is true potassium phosphate, and is still a liquid in solution.

If potassium phosphate were produced by this method at Muscle Shoals or elsewhere in the South or West it could be used to fix by-product coke-oven ammonia gas and produce a complete fertilizer of very high concentration. Perhaps it would be necessary to dose it up with a little of the other concentrated fertilizer elements to get the proper plant food value for the different crops.

Now, in reference to the present type of fertilizer, as you have been told, the component parts of fertilizer with respect to the plant food are ammonia, phosphoric acid, and potash. The statistics do not show the exact amount of each used throughout the United States, because they vary, depending on the crop they are used on and the availability of the potash. When our supply was largely cut off, of course, we did not use as much potash or as large an amount of Chilean nitrates; but it is generally accepted that in the South, where a larger part of the fertilizer is used, the average is not far from 3-9-3, as known in the trade, or 3 per cent ammonia, 9 per cent phosphoric

acid, and 3 per cent potash, making a total of 15 per cent plant food and 85 per cent inert material or filler. The variations in the Middle West and the East and so on are slightly different from that, but perhaps that is not far from the general average of the United States.

Now, the natural question comes, why do the fertilizer people, the fertilizer manufacturers, produce a material and ship it that is so low in plant food content as indicated? The answer is rather simple. It is not because they desire to deliberately dilute the product and put in a filler, but by virtue of the process by which they manufacture it.

As in all other things, there must be development. The development that we have made in our process there makes it possible for them to produce a more concentrated fertilizer. Of course, there is still another question: Can you get the farmers to use it? A lot of them have been in the habit of buying something at so much per ton. When you ask them five times as much per ton you are going to have a little difficulty in getting some of them to understand they are not paying five times as much, but getting something that is concentrated. That will come, it is true, but it will be slow. There will have to be a campaign of education.

I think it might be proper to read into the record a statement in the Fertilizer Green Book entitled, "High analysis approved." I want to read just three paragraphs from this and then there are some testimonials from the different State and Government experiment stations. The article reads as follows:

"1. It will effect savings in the cost of manufacture, labor, bags, transportation, handling, storing, etc., because each ton of goods will contain more pounds of actual plant food.

"2. It will reduce the large number of useless, wasteful brands, through the elimination of low-analysis mixtures, thereby simplifying the farmers' fertilizer problems and increasing manufacturing efficiency.

"3. It will enhance the quality and reliability of fertilizers, the direct result of which will be better results in the field."

As I understand it, the problem before this committee is, what to do with the fertilizer situation at Muscle Shoals.

I think we can say with a definiteness that leaves no room for question, that during the last three years and a half of experimentation at Anniston, Ala., where our plant is located, we have positively proven that phosphate rock can be smelted in an electric furnace and phosphoric acid collected for use in the fertilizer industry that will reduce the present costs.

Referring to Prof. Whitney's testimony as to the amount of phosphoric acid that is washed away and left on the dumps at the mines, we have used and can use a much lower grade phosphate rock than can be used in the sulphuric acid method. That alone represents a great saving. For instance, I have an option on one large tailing pond, as they call it, at 50 cents a ton, which will represent a saving to me, when I utilize it, of some five or six hundred thousand dollars versus the cost of mining new rock and carrying it through all the processes to utilize it. That alone is an important point in reducing the costs.

I believe the real point in connection with Muscle Shoals has been missed. You have talked of ammonia in its various forms as being produced there. Ammonia represents only about 2 per cent, or perhaps, a little more, of the total of the plant food used in fertilizer. It seems to me that if you are looking at this from a business standpoint, as to how you can really reduce the cost, you would want to consider also the largest element, phosphoric acid, which is from one and one-fourth to one and one-half times the total weight of the potash and the ammonia combined.

I do not know what the experts will say to this statement, but there were certain facts brought out at the hearings on March 22, 1920, from which I obtained this information.

The CHAIRMAN. What hearing was that?

Mr. SWANN. That was before the Senate committee in reference to the production of atmospheric nitrogen at Muscle Shoals.

The CHAIRMAN. What is the document you are referring to?

Mr. SWANN. Hearings before the Senate Committee on Agriculture and Forestry, conducted in 1920.

According to the statistics contained therein, in 1909, by the cyanamid process, there was produced 2,500 tons, by the Haber process, none; in 1913, by the cyanamid process, 60,000, by the Haber, 7,000; in 1917, by the cyanamid process, 200,000, and by the Haber process, 110,000; in 1920 by the cyanamid process, 325,000, and by the Haber, 308,000, showing conclusively that the cyanamid process was not increasing in anything like the relation of the Haber process.

I do no pretend to be an expert on the production of ammonia at all, but I am merely taking the figures and, naturally, looking at the Muscle Shoals plant to see what could be done with it and knowing that our furnaces at Anniston were of the same general type as the furnaces at Muscle Shoals, a simple archroof of brick could be put over the furnaces in Nitrate Plant No. 2 and a long brick gas main built, a cooling system and a precipitator built, and phosphoric acid could be produced there in large quantities in that plant, which is well equipped to handle phosphoric acid, since the elements or the raw materials that go into making carbide are lime and coke, and the elements that go into the other material could be handled in the same bins, being phosphate rock, silica rock, and coke braize.

You would, of course, in that connection, not make ferro phosphorus which we have made.

Then, either by the modified Haber process or some other process which will likely come, you would produce your ammonia and not carry it to the point of ammonium nitrate or ammonium sulphate, but fix the gaseous ammonia into liquid phosphoric acid produced there, and if it was found cheaper to produce your potash than to buy it, charge into your electric furnaces potash-bearing shale from the neighborhood, and there are great tonnages of it, so that you would produce the potassium phosphate as a liquid and utilize that in fixing your gaseous ammonia into a complete, concentrated fertilizer.

Now, with respect to concentrated fertilizer, as I stated before, the farmer may be rather slow to come to it, but I believe in his intelligence, and that when once shown, he will use it, and I do not think that anything can stop the development and the utilization of concentrated fertilizer.

A number of the experts believe that the farmer will use on his soil direct a more concentrated fertilizer, but it is very easy to produce a concentrated fertilizer that will contain from four to five times as much plant food as is now contained in an average ton of mixed fertilizer, ship it to him, even though the average freight rate, perhaps, is not over $3 or $3.50 per ton from the point of production to the point of consumption, let him mix that concentrated fertilizer with two or three or four sacks of good dry sand or good dry dirt, and I suppose if he is a dirt farmer he ought to have those products on his farm, and apply those to his soil in the equipment he now has, his farm machinery, which is adapted for spreading a dilute fertilizer on the soil.

This process is adaptable to be used anywhere, where secondary or cheap power is available, and I say secondary because that means cheaper power than primary power, and, of course, should be used if the greatest economy is desired as near the center of consumption as possible.

In carrying on our investigations we have negotiated with the Aluminum Co. of America for secondary power at their Alcoa, Tenn., plant, believing we could make some fertilizer for the section that could easily be served from there. We have had negotiations with an electric furnace company at Chattanooga, who own an electric furnace that is partially idle, and get their power from the Tennessee Power Co. We have had negotiations with the Anaconda Copper Mining Co., who have a large electric furnace plant at Great Falls, Mont., which they built during the war to produce ferromanganese, and which is now shut down, and through an allied company, the Montana Power Co., they have large quantities of power available.

Also, there have been discovered in that section of the West the greatest known deposits of phosphate rock in the world. That phosphate rock has no hope of reaching certain of the present consuming markets, unless it can be sent out in a concentrated form. And, just at this point, without apparently knocking the present method of manufacture, I would like to call your attention to a striking instance of which I do not believe you will find the equal in any other of the great industries. Phosphate rock, as mined, contains about 32 per cent phosphoric acid. After you have treated it with sulphuric acid to make it available to the soil, it has an average of about 16 per cent. By the time it actually gets to the farmer it is cut down in the mixture he gets to about 9 per cent; or the finished material is approximately one-fourth of the raw material originally mined. High freights have brought a lot of that home to us. Many things could be done with lower freight rates that can not be done to-day. High freight rates will relocate many industries, and that is something to be considered. When you try to find out how much fertilizer can be made at Muscle Shoals, you must bear in mind that you could make too much there. It would cost you too much to distribute from that point. There are

other water powers. There are other secondary powers. There are other locations that use it. That is purely a business question, as to the exact location and the tonnage that could be made at that particular location, depending on the assembling of raw materials, the cost of manufacture, and outgoing freights to the point of consumption.

To go into more detail regarding the present method of manufacture and to repeat what I said about the fertilizer manufacturer not deliberately diluting his material, his costs are high because of the fact that he has to use in the manufacture of both acid phosphate and sulphate of ammonia, sulphuric acid, an inert material that does no good, and that will finally sour the soil if too much is used.

For instance, assume the figure is correct that the price of sulphate of ammonia as testified by a previous witness is $50 a ton, and assume an average price of sulphuric acid of $12 delivered at the by-products coke-oven plant, the producer of by-product coke-oven ammonia would be just as well off if he could sell to the producer of fertilizer liquid ammonia at $38 a ton as he would be if he would sell sulphate of ammonia at $50 a ton. That money is lost. In round figures, the amount of plant food in a ton of ammonium phosphate, which we can produce by this process averaging 13 per cent ammonia and 62 per cent phosphoric acid, you would have to ship 4.35 tons of ordinary acid phosphate and sulphate of ammonia to either the farmer or the fertilizer manufacturer in order that they might get out of it the same amount of plant food.

You will ask: Why have they not used this before, and on what scale are we doing it?

We first developed, as I stated, the food grade market because it brought us a higher price. We needed the money in our developments, and just as this period I think it only fair that I make a statement regarding our company, because of my previous connection with the Alabama Power Co., because I am buying power from them at this time, and of my association with the other companies, a number of them, which are involved in one way or another. I am very glad to say that I have been selling Mr. Ford phosphoric acid which he uses in rust-proofing his cars. I am not only independent but always have been.

The CHAIRMAN. The committee will be very pleased to hear your statement.

Mr. SWANN (continuing). Having owned 51 per cent, or the control of my company, and always expecting to; and it has been a development in which, I will say, we have been encouraged by the power company. We have been assisted by them at many times when conditions were hard. We have leaned on their pocketbook a good many times, and we are negotiating with them now for a large block of secondary power from their new dam on the Coosa River; at the same time, we have sold our fertilizer to the fertilizer companies, since we were not producing, up to this time, a sufficient quantity to justify us in having a distributing organization. So you can see that it places me in a very peculiar position, and I have tried to relate to you a few of the fundamental facts in the statement of what has been accomplished. This can be repeated at Muscle Shoals. This can be repeated in Montana, in Georgia, in Tennessee, or elsewhere.

The farmer can get cheaper fertilizer by this process and leave the manufacturer a legitimate manufacturing profit which he must have.

If you will refer to the financial statements of some of the fertilizer companies, you will find they have lost some very large sums of money. I believe the balance sheets of the two largest companies show a loss of above $20,000,000 last year in the decline in prices, due to the fact that they have to buy their raw materials a long time ahead.

Now, my object is to make the bulk of the money we make out of the food-grade product which we can reduce greatly in value, and to see our process used wherever it is required in the United States for the production of fertilizer. We have a total of 15 patents on it. We have spent a lot of money. We risked everything we had and a few things we did not have in the development of the process. We only expect a very reasonable royalty. We will not burden the industry. We only want a very small part of the saving that can be effected by whoever may want to use this process.

I think this statement will rather clear up any question of my connections or any question as to what our policy may be. I will be very glad to answer any specific questions the committee may desire to ask.

The CHAIRMAN. At the beginning of your statement, or near the beginning of your statement, you spoke of the fact that England had been very active prior to the war and could not extend her industries over the world during the war, but at the end of the war period began to reach out again for the market in this country; do you remember that?

Mr. SWANN. I do; to the tune of $250,000. That is what I lost in the decline of manganese when we had tried to do what the Government wanted us to do in keeping a stock of manganese ore ahead.

The CHAIRMAN. Is there no provision of any American law that will protect the American producer in that regard?

Mr. SWANN. I personally appeared before the Federal Trade Commission and we tried to invoke an old antidumping law, and got away with it for a short time, but it did not hold in court. They were selling in the United States cheaper than they sold in England or on the continent.

The CHAIRMAN. They were, at that time?

Mr. SWANN. Yes.

The CHAIRMAN. Is there any protection so far as the tariff is concerned?

Mr. SWANN. No. There is a tariff proposed but not enacted.

The CHAIRMAN. That is being proposed in the bill which is still pending in the Senate committee?

Mr. SWANN. Yes.

The CHAIRMAN. And that will give protection if it is enacted into law?

Mr. SWANN. Yes.

The CHAIRMAN. You said something about concentrated fertilizer and the difficulty of getting the farmers to use it. The farmer, I take it, from what you and others have said, is accustomed and has been accustomed for some time to purchase fertilizer which contains quite a good amount of filler.

Mr. SWANN. Yes.

The CHAIRMAN. Of course, he pays the freight on that, and not only pays the freight but pays for the service of packing it in bags or boxes, whichever way it is shipped, and that is all an added expense, I take it.

Mr. SWANN. Yes; and when he finds out the cost of packing and of freight and of bags and of handling, he will certainly turn slowly but surely to the more concentrated fertilizers. The farm bureaus and the county demonstration agents and so on will carry that propaganda on, and I believe a market will be found for the concentrated fertilizers about as fast as they are developed. Prof. Whitney went one step beyond what I have suggested, which I think will apply to certain crops, and that is, they will take this concentrated fertilizer, dissolve it in water, and spray some of it or put it on with a sprinkler. That is perfectly feasible in truck farming especially, where they utilize a large tonnage of fertilizer per acre.

The CHAIRMAN. You have explained what I wanted to ask you about. Do you feel it will be very difficult to show the farmers of this country the benefits that will accrue to them if they utilize the concentrated fertilizer rather than the stuff that is being sold to them containing great quantities of filler?

Mr. SWANN. It will be difficult. It is always difficult to get any one great class like the farmers to change and break away from things they are used to. We are all more or less creatures of habit, but they will do it. Some of them are now buying their own fertilizers and mixing it, and I would like to explain one point in that connection. If a farmer buys acid phosphate to day, and, say sulphate of ammonia or Chilean nitrates for his ammonia, and kainite or muriate of potash from Germany for his potash, and attempts to mix those together, there is a difficulty for him unless he has a certain amount of technical training, to mix them in the proper proportions; and the method we propose is to send it to him ready mixed in the concentrated fertilizer, and to use the expression of one of the gentlemen of the committee, have him buy it just as he goes to the drug store and buys some medicine which says, "Take two tablespoonfuls in half a glass of water three times a day." We will put on the sack, "Mix this with four sacks of dry dirt," and then if he wants to pay more for the package goods, put your filler in and sell it to him. Sooner or later he will learn how. In offering some of our products, we found they objected to the concentrated form, and then we said, "We will give you 16, 32, or we will give you 48 per cent," but, in that case, we charged for putting in the filler, because we had to put it in.

The CHAIRMAN. Of course, that created additional work.

Mr. SWANN. Certainly; if they want to pay for it, it is their loss and misfortune. Now, it will take time to correct that condition, but I have enough

confidence in the intelligence of the farmer and the experimental stations and the county agents, etc., to believe it will come about as fast as the demand and the supply of concentrated fertilizer is made available.

The CHAIRMAN. Out in California we have extension lessons that are given to farmers by both of our great universities, the University of California, and also the Leland Stanford, jr., University, so that the professors go direct to the farmers and instruct them in regard to these matters. Is that done in this country very generally?

Mr. SWANN. Oh, yes; it is done very generally.

The CHAIRMAN. And are the meetings well attended by the farmers?

Mr. SWANN. Yes; I think they are.

The CHAIRMAN. Do you not think if that course is pursued generally, the farmer will get used to using the concentrated fertilizer very much quicker than he would otherwise?

Mr. SWANN. I do. The head of one of the farm bureaus last night told me that as soon as concentrated fertilizer was available that through his and other organizations a propaganda would be carried on so that the farmer would realize the benefits that would come to him, and there would be a market made available to absorb the tonnage, and I believe that is true.

The CHAIRMAN. You say, "as soon as the concentrated fertilizer becomes available"?

Mr. SWANN. Yes; it is not available to-day in large quantities. As in any new process, it takes time to develop it. For almost a year after we made our first experimental phosphoric acid we could not repeat the results we obtained on a small scale. There was more grief than I would like to tell you about. I could write 10 volumes on what not to do and put on about 2 pages all the things we know how to do.

Mr. GREENE. Do you have any suggestions to make or testimony to offer relative to the terms of the Ford proposition, Mr. Swann?

Mr. SWANN. I have not, Mr. Greene. As I tried to explain my position, we have attempted to develop the process for making concentrated fertilizer, having been connected with and known of the Muscle Shoals proposition for over 10 years; I have always believed it would be developed by some one. I did not know by whom or how it would be operated. I do not suppose any of us know now.

Mr. GREENE. Then, your testimony runs to the advisability of having a concentrated fertilizer for the farmers rather than to the specific details of this Ford proposition?

Mr. SWANN. I am simply trying to show that we have accomplished the thing that is talked about, and that it can be utilized there and elsewhere, and I trust our process is used, whover gets it.

The CHAIRMAN. I want to say to the gentlemen of the committe that we have another gentleman here who is ready to testify before us this afternoon. and I feel that if we will just ask questions of the witness and eliminate speeches and things of that sort, we will get along very nicely. I want to say that I did not mean that for Mr. Greene, but this morning we had a little example of how far we can go without getting anywhere, and I would like to get through as speedily as we can.

Mr. HULL. Mr. Swann, following the line of the questions asked by Mr. Greene, then it is your opinion that if we make this contract with Mr. Ford. or something similar to it, he could develop this process which you speak of for making concentrated fertilizers?

Mr. SWANN. He would not have to develop it; it is already developed. It could be utilized.

Mr. HULL. He could utilize it, then?

Mr. SWANN. Yes.

Mr. HULL. It might be developed further.

Mr. SWANN. Oh, it will be developed further as the development goes on, of course.

Mr. HULL. That is what I had in mind.

Mr. SWANN. But it is developed to the point now that makes it available.

Mr. HULL. Then does it not conclusively follow that he will be able to cheapen fertilizer to the farmer very materially?

Mr. SWANN. With the price of power suggested, there is no question but what fertilizer can be produced cheaper.

Mr. HULL. Now, just one other question. You seem to place a great deal of emphasis, and I think we all do, on the fertilizer end of this proposition. However, I want to call your attention to the fact that fundamentally this is a question of national defense, and the question of the fixation of nitrates is what this committee is primarily trying to solve. It is solved, as I understand it, in plant No. 2. We have the plant there and we want to keep it. Now, the question comes up, if Mr. Ford develops along the line you have suggested, would the fixation of nitrate be maintained in plant No. 2?

Mr. SWANN. Of course, I can not answer what he or anyone else would do. I can only say from the knowledge I have I do not believe ammonia for fertilizer can be made as cheaply by the cyanamid process as it can be obtained from other sources.

Mr. HULL. Yes; but you are speaking of ammonia for fertilizer.

Mr. SWANN. Yes.

Mr. HULL. We are speaking of ammonium nitrate for high explosives. That is the question we have got to solve primarily.

Mr. SWANN. If your plant is there, of course; it is available.

Mr. HULL. And in order to follow this line of development, it would not be necessary to destroy what we have, would it?

Mr. SWANN. No.

Mr. HULL. That is the point I had in mind.

Mr. SWANN. I did not make complete my statement a moment ago. Should it be desirable from an economic point of view and from the point of view of getting low costs, which, of course, must come, you could convert these furnaces over to phosphoric acid furnaces, and I should say that two weeks' time would be all that would be required to convert them back to carbide furnaces. All you would have to do would be to tear the roof off and put in a new lining of carbon blocks, and if you wanted to keep prepared, you could keep on hand a stock of carbon blocks sufficient to line all the furnaces again.

Mr. HULL. That is the answer I wanted. I thank you.

Mr. CROWTHER. Mr. Swann, you said you had some acquaintance with the conditions at Muscle Shoals, having been with the Alabama Power Co. They owned the site of Dam No. 2 or the Wilson Dam, did they not?

Mr. SWANN. Yes, sir.

Mr. CROWTHER. And they disposed of that to the Government for a small consideration?

Mr. SWANN. It is my understanding they gave it to the Government. That is my understanding but I am not exactly informed on that.

Mr. CROWTHER. You do not know about that. What is ferromanganese used for?

Mr. SWANN. It is used in the production of steel. Every ton of steel must contain a certain percentage of manganese and especially shell steel contains more than the general run of steel.

Mr. CROWTHER. Is it not true that in the early part of the Sixty-sixth Congress we introduced in the House a special bill in connection with five or six other small bills to protect that material from a tariff point of view, as a war industry.

Mr. SWANN. Yes.

Mr. CROWTHER. And that was one of the bills criticised as popgun legislation or popgun bills by Mr. Kitchen who was on the floor at that time, and it did not meet with any very favorable consideration, and tungsten, if I remember correctly, was another product, and several other things.

Mr. SWANN. Yes.

Mr. CROWTHER. You spoke of the sprinkling method of using fertilizer. I think I brought that out by asking Dr. Whitney whether the two ingredients he has submitted were soluble in ordinary water and he said yes. There is nothing new about that?

Mr. SWANN. Absolutely nothing new.

Mr. CROWTHER. The old fertilizers and the natural fertilizers have been sprinkled and distributed that way on the soil for many years, have they not?

Mr. SWANN. That is correct.

Mr. CROWTHER. Do you thing that is a pretty good method to use?

Mr. SWANN. In some instances it might be a very good way, especially if you bought your fertilizer originally in a concentrated form.

Mr. CROWTHER. Are these synthetic compounds?

Mr. SWANN. Your ammonia, perhaps, would be called a synthetic compound.

Mr. CROWTHER. What have you to say about Dr. Whitney's statement that after a 10-year period of treatment with these compounds or these artificial fertilizers, the crop growth showed a gradual increase up to 10 years and then they went

down in direct proportion to the soil that had had no treatment at all. You will remember that he spoke of that?

Mr. SWANN. Yes.

Mr. CROWTHER. Have you any knowledge on that subject?

Mr. SWANN. I have no direct knowledge on that subject.

Mr. CROWTHER. He spoke as if they were hurting the soil with these artificial ingredients because after 10 years the crops deteriorated in just the same proportion that crops deteriorated on soil year after year that had had no special fertilizer and no special attention given to it, and I think he spoke of the distinct advantage of the natural forms of nitrogen that were produced by rotation of crops and by plowing in certain crops, as being perhaps the ideal system. I was just wondering if you had anything to say on that. That is all.

Mr. FIELDS. In your opinion, Mr. Swann, there is no question but what it will be possible to get fertilizer to the farmer in concentrated form, so he can use it and apply it to the soil without the expense of the large amount of filler that is carried to-day.

Mr. SWANN. That is our opinion and we have backed it up with our money in the last three years and a half.

Mr. FIELDS. I am mighty glad to hear you say that, and I will say, Mr. Chairman, that what he has said and shown here is what I had in mind the other day when I asked the Chief of Ordnance about the possibilities of concentrated fertilizers. You say there are heavy deposits of phosphate rock in Montana?

Mr. SWANN. Yes.

Mr. FIELDS. And in what other sections of the country?

Mr. SWANN. The principal sections are the Tennessee lump rock, which is very near Muscle Shoals, and the deposits in Florida. There is a little bit in South Carolina but the principal point of production is Florida, Tennessee coming next. The western deposits are large but the market is not very great. They are too far from market now.

Mr. FIELDS. So the fertilizer will have to be manufactured in those sections, and when that is done, it will save freight rates to the farmers in those sections of the country?

Mr. SWANN. Yes.

Mr. FIELDS. I do not want to make a statement, Mr. Chairman, but I do want to refer to one or two questions you asked a moment ago about the professors of the colleges in your State. I suppose every State in the Union, certainly every one I know of, is working with the Federal Government in what they call farm demonstration work.

The CHAIRMAN. Extension courses, they call them in California.

Mr. FIELDS. They do not come in contact with all the farmers, but they do come in contact with the most progressive farmers of the counties, and the elimination of the heavy expense incident to freighting and handling the amount of filler that we get in fertilizer to-day is a crying need of the farmers. They all realize the necessity of relief from that expense. That is all, Mr. Chairman.

Mr. QUIN. Mr. Swann, you have from actual experience of manufacture, the knowledge of this subject which you have just detailed to this committee, as I understand it.

Mr. SWANN. Yes.

Mr. QUIN. Then it is not any dream that concentrated fertilizer can be produced and turned over to the farmer?

Mr. SWANN. No, sir.

Mr. QUIN. The gentleman who contended that it was impossible unless you had about 80 per cent of filler is in error, is he not?

Mr. SWANN. By these samples we can demonstrate that.

Mr. QUIN. From practical demonstration by your own factory, there is no doubt but what concentrated fertilizer can be sent out and economically sent out from the factory to the consumer?

Mr. SWANN. I have no doubt about it; no.

Mr. QUIN. As you stated, the expense of this so-called filler, this sand or dirt, and the expense of putting it into sacks and storing it in warehouses and the expense of high freight rates, adds materially to the cost of the fertilizer sent in bulk with all that filler, does it not?

Mr. SWANN. Yes; and not only that, but, as I stated before, they do not add the filler, but by the process of making it with sulphuric acid the filler is produced. So you have an additional cost. It is more expensive even than if you did add it, because filler would not cost as much as sulphuric acid, the material they use to make available the phosphoric acid in the rock and to fix the ammonia and the ammonia gas.

Mr. QUIN. A fertilizer factory at Atlanta, Ga., Jackson, Miss., or New Orleans, La., gets its gross products in as concentrated form as possible?

Mr. SWANN. Yes; the way the rock is mined, they do. They get as high grade as they can get.

Mr. QUIN. And still the expense on all of that gross product in shipment and handling must be paid by the ultimate consumer of the fertilizer?

Mr. SWANN. Yes.

Mr. QUIN. Then as a practical and sensible thing for the farmers directly, and for all the people who consume farm products indirectly, it is necessary to give them cheap fertilizer, or as cheap as possible, is it not?

Mr. SWANN. Naturally.

Mr. QUIN. In the Ford contract he proposes to put this fertilizer up to 110,000 tons, and that means if they add a filler to it in proportion, it would be about 2,000,000 tons of fertilizer ready to go on the soil.

Mr. SWANN. I think that was the figure given. Of course, the amount of nitrogen or ammonia varies in the different fertilizers and that question can only be definitely answered when you state the formula, but that is about correct; yes.

Mr. QUIN. The question of potash was mentioned by you. Is it possible to get potash economically from any source around Muscle Shoals?

Mr. SWANN. At the present time you can buy German potash cheaper than you could produce it.

Mr. QUIN. What sources of potash have we in the United States?

Mr. SWANN. Well, there is the kelp in the western States, and the natural brines in Nebraska and the by-product from the cement mills, as well as wood ashes and various miscellaneous, small sources.

Mr. QUIN. The great potash field at present is the quarries of Germany?

Mr. SWANN. At the moment it can be bought cheaper than it can be produced at most places. I am not competent to state the cost of the western producer. I believe they asked for a tariff for a short period, and at the end of that period they claim they will be in position to compete with the natural sources of potash.

Mr. QUIN. Would you mind giving us for the benefit of the record, what is potash?

Mr. SWANN. Well, potash is an element of plant food, the same as phosphoric acid or ammonia. It is one of the three elements that go into fertilizer.

Mr. QUIN. And it is one of the essential things for certain plants and certain soils where the soil does not produce it?

Mr. SWANN. Yes.

Mr. QUIN. And it comes from the decomposition of animal and vegetable matter on the soil, does it not?

Mr. SWANN. That contains some of the other elements also.

Mr. STOLL. Mr. Swann, what element of fertilizer do we get from the coke ovens?

Mr. SWANN. Ammonia.

Mr. STOLL. Will the process you have mentioned interfere with their business?

Mr. SWANN. Not in the least, and as I have explained, they buy approximately 1 ton of sulphuric acid to fix the equivalent of a ton of sulphate of ammonia. That ton of sulphate of ammonia as shipped out contains about 25 per cent ammonia. The other 75 per cent is the salt from the sulphuric acid, a wrapper or a filler or a carrier, or whatever you want to call it.

Mr. STOLL. Which of the three elements we have in our fertilizer is the scarcest in this country?

Mr. SWANN. I should say that depends entirely on the crop and what you want to use it for. Of course, we have more phosphoric acid than any of the other elements, except that if ammonia or nitrogen is made from the air, I assume we have our share.

Mr. STOLL. Is it a fact that ammonia is the scarcest?

Mr. SWANN. At the present moment, all of it is a drug on the market. We are exporting. We always do export considerable phosphate rock, and we are exporting sulphate of ammonia now, and of course, import some of our potash.

Mr. STOLL. The use of fertilizer now is not nearly as extensive as it was years ago on account of the high prices and on account of everything going to the "bowwows;" is not that true?

Mr. SWANN. That is true.
Mr. STOLL. In normal times, is not ammonia the scarcest article?
Mr. SWANN. I do not think so.
Mr. STOLL. Well, what is the scarcest?
Mr. SWANN. In normal times there is plenty of each available. I do not know that you could pick out one as the scarcest.
Mr. STOLL. And there is an abundance of each?
Mr. SWANN. There has been a rapid development of the by-product coke ovens and one of the things worrying them is how they are going to dispose of the ammonia.
Mr. STOLL. Do you mean that there is an abundance of ammonia without getting it from the air?
Mr. SWANN. No; I would not say that. As Prof. Whitney has pointed out, we should be using about 10,000,000 tons of fertilizer instead of dropping back to—I do not recall his figures, but I think it was 5,500,000 tons that we used last year.
Mr. STOLL. What I wanted to get at was this: In order to get the supply of ammonia we need, we are dependent upon the atmosphere to get it, are we no?
Mr. SWANN. Some of it, yes; I should say.
The CHAIRMAN. We are very much obliged to you, Mr. Swann, for your very clear statement. It has been a great pleasure to hear what you have said.

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES.
Monday, February 20, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. On February 3 Mr. K. F. Cooper, vice president of the American Cyanamid Co., and, as I understand it, the head of the Air Nitrate Corporation, sent me this telegram:

Hon. JULIUS KAHN,
Chairman Committee on Military Affairs,
House of Representatives, Washington, D. C.

Air Nitrates Corporation requests opportunity to be heard by your committee on any proposal affecting United States nitrate plant No. 2 at Muscle Shoals and particularly regarding reported plan to violate rights of this company under contract of June 8, 1918, with United States Government.

K. F. COOPER, *Vice President.*

I may say that he is also vice president of the American Cyanamid Co. To that I replied that he would be given a hearing at the proper time, and on February 8 I received this letter from him:

AIR NITRATES CORPORATION,
New York, February 8, 1922.

Hon. JULIUS KAHN,
Chairman Committee on Military Affairs,
House of Representatives, Washington, D. C.

DEAR SIR: This acknowledges with thanks receipt of your courteous note of February 4 advising us that we will be given an opportunity to present before your committee a statement regarding the Muscle Shoals matter.

Awaiting your further advices as to the date when it will best serve the convenience of your committee to have us appear, we remain,

Yours, respectfully,

K. F. COOPER, *Vice President.*

A few days ago I sent Mr. Cooper a telegram asking him to appear this morning for the purpose of giving his testimony before the committee, and he wired back that he would send down Mr. Hammitt, of his company, who is thoroughly familiar with the situation. Mr. Hammitt is here this morning and we will be very glad to hear from him on this subject.

STATEMENT OF MR. J. O. HAMMITT, VICE PRESIDENT AIR NITRATES CORPORATION, 511 FIFTH AVENUE, NEW YORK.

The CHAIRMAN. Mr. Hammitt, will you kindly give your name and also the position you occupy at the present time?

Mr. HAMMITT. My name is J. O. Hammitt. I am vice president of Air Nitrates Corporation which designed and built United States plant No. 2, commonly known as the Muscle Shoals nitrate plant.

Air Nitrates Corporation is a subsidiary of the American Cyanamid Co. Air Nitrates Corporation has a purely nominal capitalization of $1,000, all of which is owned by the American Cyanamid Co. The real party in interest is the American Cyanamid Co., whose stockholders have all the beneficial interests in what rights are possessed by Air Nitrates Corporation, and in order to avoid confusion the committee may consider me here as the representative of the American Cyanamid Co. or of Air Nitrates Corporation in case any questions arise affecting either of those two companies.

The identity of the two companies is practically one, and the reason why Air Nitrates Corporation was created at all was twofold: First, to serve the purposes of the United States Government; and second, to protect the interests of the stockholders of the American Cyanamid Co.

The Government desired to have a plan set up by which all of the accounts, all of the expenditures, all of the activities relating to the design and construction of this nitrate plant and other nitrate plants it desired to have built to use the same process, should be subject to supervision, examination, inspection, and audit by the representatives of the Government, and for the purpose of making that as simple and inexpensive and effective as possible, it was desired that a separate corporate entity be set up to handle this particular job so as not to mix any of these matters with the other business of the American Cyanamid Co.

The American Cyanamid Co. also desired that a separate corporation should be created in order that the assets of the American Cyanamid Co. should not be in any way involved in connection with the construction of these nitrate plants, amounting, before we got through, to approximately seven times the total assets of the company.

The reason we appear before the committee is that the acceptance by the United States of the offer of Mr. Henry Ford for the acquisition by him of the nitrate plant and water-power property at Muscle Shoals violates the solemn and binding agreement of the United States Government entered into with our company under date of June 8, 1918, and I think there is now on the desk of each member of the committee a copy of the contract referred to, and on page 17 of that contract is article 19, which is the particular article to which I refer, and which would be violated by the acceptance of the offer of Mr. Ford.

This article reads:

"*Sale of plants.*—If upon cessation of this war, or for any other reason, the United States determines to cease the construction, equipment, or operation of any of the said plants and to dispose of the same, the agent shall be given the first opportunity (for a reasonable period of time not to exceed six months after receipt of written notice stating the determination of the United States to dispose of the same, and the material terms upon which such disposition will be made, to purchase the same upon as favorable terms as the United States is willing to accept therefor, before the United States shall sell the same to any other party."

The agent referred to in this contract and in the paragraph and in the paragraph I have read is Air Nitrates Corporation, which I represent. The plants referred to in this paragraph include the Muscle Shoals plant, United States nitrate plant No. 2.

The contract is signed in behalf of the United States by Col. Samuel McRoberts, representing the Ordnance Department.

The existence of this contract, as a binding obligation of the United States, standing definitely in the way of an acceptance of the proposal being considered by the committee, is recognized in the report of the Chief of Ordnance, dated January 28, 1922, which has been transmitted to the committee and is in its records.

The CHAIRMAN. Was this contract signed by anybody on behalf of the Cyanamid Co.?

Mr. HAMMITT. It was signed by Mr. Frank S. Washburn, as president of the Air Nitrates Corporation and there is a separate contract entered into between the United States and the American Cyanamid Co., and further, a contract between the American Cyanamid Co. and Air Nitrates Corporation, making up the complete scheme which was set up for the work upon the nitrate plants.

The Secretary of War and the Chief of Ordnance have stated their view to the committee, that having entered into this agreement the United States should live up to it.

The Acting Judge Advocate General of the Army, however, has submitted to the Secretary of War an opinion to the effect that since no authority existed for the sale of the plants at the time this contract was entered into, this particular provision of the contract is null and void.

Now, it is not my intention to attempt to make a legal argument before the committee; but I wish that the committee would understand that we have not been guilty of any neglect in seeing that these legal questions which might arise were passed upon before, rather than after, the contract was entered into.

This was a very important provision of the contract. From the point of view of the stockholders of the American Cyanamid Co., it was necessary that some kind of protection be provided against the plant which we were to design and erect for the Government during the war, being used after the war for the purpose of destroying the company responsible for its design and construction; and so we desired to obtain the very best legal advice that we could obtain in order that the provision to protect the stockholders of the American Cyanamid Co., as placed in the contract, should always hold; and after consulting the representatives of the Government and ascertaining that it was satisfactory to them for us to retain Mr. Charles Evans Hughes, the present Secretary of State, in connection with this question, we retained Mr. Hughes for that purpose.

Now, I was not personally present in the conferences in which the provisions of this contract were agreed upon, but I can state to the committee that Mr. Hughes was present in the conference where this matter was considered, and that it was on the strength of his advice that this form of protection was provided for the American Cyanamid Co. in the terms of this section.

The CHAIRMAN. That is, section 19?

Mr. HAMMITT. Article 19 of the contract; yes, sir. It is our belief that the advice which was satisfactory to us and satisfactory to the Government, at the time, was sound advice; that this provision of the contract will hold in the courts; but we set up that it is unfair to put us in conflict with the United States Government on this matter and to make us wend our weary way through the law courts for a period of years in order to establish this right. The appeal I wish to make to this committee is not based upon the question of whether that contract is valid or not, whether that provision is null and void on account of some technicality, or whether it is binding. That question, if it must be settled on that ground, will have to be settled in the courts; but my appeal to this committee is an appeal to the fairness of the committee and to the support of the public policy in favor of the United States Government living up to its agreements.

Here is the situation that led those who made that agreement to believe that it was fair that that kind of protection should be provided.

The American Cyanamid Co. had devoted years of effort and millions of dollars of the money of its stockholders to acquiring patent rights, developing processes, in expensive research, in the design and construction of plants, and the placing of those plants in operation, and in the difficult, time-taking and expensive work of introducing new products into American commerce and finding a stable place in American commerce for those products; and then came the war with Germany, and the only company, the only organization on this side of the Atlantic Ocean that was engaged in fixing nitrogen on a commercial scale was the American Cyanamid Co.

It had not been then, and it has not been up to now, a marvelously profitable operation. The American Cyanamid Co. has succeeded in paying the 6 per cent dividends on its preferred stock with the exception of the last two quarterly payments, and it has never paid a penny of dividends on its common stock; but it was a contribution to American industry and there was a hope in it that the money that had been invested in it could be got out.

The United States Government needed this process for the purpose of manufacturing ammonium nitrate, a war explosive; and the American Cyanamid Co. was called upon to place its processes, its experience, its knowledge of the art that had cost large sums of money to acquire, and years of efforts, at the disposal of the United States Government for fighting the war; and, of course, the American Cyanamid Co. was desirous of doing that, as every American corporation capable of contributing anything toward winning the war, was desirous of contributing everything it had. But while we would have been very poor patriots if we had not been willing to give the Government everything we had to help toward winning the war, we would not only have been very poor business men but guilty of a violation of our trust to our stockholders, if we had not asked for protection against the use, after the war, for the purpose of destroying us and the investments of our stockholders, of the plants that we were to build for the Government during the war and which without our cooperation could not have been designed and built.

Now, we might have asked for protection in a number of different ways. It might have been asked that after the war these plants be destroyed, but the Government desired that these plants should be maintained permanently or at least indefinitely as a protection against future war emergency, and so they were built as permanent plants, and we put into them every bit of

knowledge and experience and skill that we had, and we delivered to the United States Government a plant that operates, that meets the requirements for which it was designed, and we did not fall down on our part of the agreement.

We might have asked that it be definitely agreed that these plants never be used for any purpose except the manufacture of war munitions, but it was desired that these plants being built as permanent plants, steel frames, masonry constructed buildings, heavy machinery, should be available for any possible future economic use in the manufacture of fertilizers and other materials, and so what did we obtain from the Government in the way of protection? We obtained merely this: That if the Government ever does sell the plant, it gives us the first chance to buy it, not on any better terms than it is willing to give to somebody else, but on precisely as good terms; and now it is proposed that a man who had nothing whatever to do with putting down there at Muscle Shoals what is there, who had nothing whatever to do with the development of the processes that are capable of being used there, who has contributed nothing to meet the Government's war problem as it is met at Muscle Shoals, shall receive a fee simple title to this plant from the United States Government, and along with it the cheapest power on the American continent, financed out of the American Treasury, for the purpose of carrying on a war of extermination against the company that designed and built that plant.

Now, if that does not shock the sense of justice of this committee, I am very seriously mistaken. Frankly, if the American Cyanamid Co. or any of you gentlemen in your private business, having made a solemn agreement of this sort, and on the strength of it induced a corporation to expose itself to hazards to the extent that the American Cyanamid Co. has exposed itself, then on account of a legal technicality endeavored to escape from that contract, we, or you, would find that people would not care to deal with us in the future, and if they did deal with us, they would deal with us at arms length; and I can not see why there is any public policy in favor of the United States Government showing a lower standard of business morality than is essential for a private corporation, if the corporation is to stay in business in the United States.

Now, the Air Nitrates Corporation and the American Cyanamid Co. have not made one penny of profit out of the contract to which I referred, or out of the designing and construction of this plant at Muscle Shoals. The record of the committee contains references to a $2,000,000 fee. There was not any $2,000,000 fee. There was a maximum fee provided of $1,500,000, but that was not money that the American Cyanamid Co. or the Air Nitrates Corporation was permitted to receive and keep. Suppose that was a fee in the ordinary sense. We did $100,000,000 worth of work for the Government.

In your general business experience, have you gentlemen had acquaintance with contracts of that character where for design and construction the fee is less than 1½ per cent? It would have been a reasonable fee, but it was not a fee in the sense that we were to receive it and keep it. We have not received it all yet, but let us assume that we do receive it all. In the first place, we are rquired to pay 80 per cent of it back to the United States Government in taxes, and that reduces your $1,500,000 down to $300,000, and that is not 1½ per cent but 0.3 of 1 per cent. Then the State of New York provides under its laws that we must pay approximately $75,000 of that to the State of New York in taxes, and that reduces the $1,500,000 down to $225,000, and then this contract itself provides that we are to deliver to the United States Government without charge the full services for the period required of the men in whom there resided to a greater extent than in any other group the knowledge and the experience and the skill and the ability for the design and operation of that kind of a plant, and we paid those men their compensation out of private funds, and it amounted to more than the balance that was left to us out of our fee, although it amounted to less during that period than we have paid since then for a similar period to the same men for their services out of the same private funds. Then there were a considerable number of expenditures which it was necessary to make on this job, if we were not to fall down on the job, which it was practically impossible for the United States to reimburse, and which the United States not only has not yet reimbursed but a considerable part of which they never will reimburse. And, gentlemen, while I can not tell you the extent of the cash loss, because the details have not yet been fully adjusted, yet I can tell you, in the first place, that what we net on this operaion is a loss. We have not been paid in American dollars for anything we gave up, and what we net on this operation is a loss, and it is somewhere between nothing and $75,000. So

I make my appeal to the fairness of the committee and to the public policy in behalf of the United States Government living up to the agreements it has made. The committee may have in mind the fact that it is dealing now with a corporation which has not been paid in other coin for anything that it contributed toward winning the war.

That finishes the statement I came here to make, Mr. Chairman.

The CHAIRMAN. I presume that when you began to negotiate with the officers of the Government regarding your help in putting up nitrate plant No. 2, you were familiar with the law that was on the statute books and had been enacted on the 3d of June, 1916. There was a clause in that law which reads as follows:

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital."

You were familiar with that, I imagine?

Mr. HAMMITT. I am quite sure that our attorneys were familiar with that provision and other provisions of law affecting this situation; and I am quite sure, Mr. Chairman, that if it were absolutely certain that that provision of law would always remain the same, it would have been useless to make any provision to cover a possible sale of the plant, but what the committee has before it now is a proposition to change that provision of the law and what the United States Government agreed to was that if that provision of the law ever was changed so that they ever did offer the plant for sale, we should have an opportunity, not on better terms, but on as good terms as anybody else, to acquire the plant.

The CHAIRMAN. You say the Government wants to change the law. Do you consider that if the Government desires to sell the plant outright to private individuals that that would be a change of the law?

Mr. HAMMITT. I would rather not testify, Mr. Chairman, regarding any question of legal interpretation; at least, without first taking the committee into my confidence to the extent of saying that I am not a lawyer.

The CHAIRMAN. You have stated your case very well.

Mr. HAMMITT. The committee would not care to take my judgment on any legal question, Mr. Chairman. If there is anything that the chairman or the members of the committee wish me to express an opinion on, having first stated that my opinion on a legal matter is of no value whatever, of course, I would be very glad to answer it.

The CHAIRMAN. The committee has been hearing this matter discussed from several viewpoints, and I think Gen. Williams stated to the committee he thought that despite that provision of the law, your company had a moral obligation; is that the way you feel about it?

Mr. HAMMITT. I feel there certainly exists a moral obligation, and I am advised and believe that there exists also a legal obligation. I came here to discuss the moral obligation, Mr. Chairman, because, quite obviously, the Judge Advocate General having passed upon the legal obligation ,if the committee does not recognize any moral obligation, we may have to determine the legal obligation in the courts, and that is a thing that we want absolutely to avoid.

The CHAIRMAN. This is the evidence before the committee:

"The CHAIRMAN. We will ask the Judge Advocate General about that when he makes his statement. State why, in your opinion, there is a moral obligation?

"Gen. WILLIAMS. The Government found itself very greatly in need of power. The Alabama Power Co. had already projected this extension, and all their plans had been drawn, and they came to the assistance of the Government at a critical time, putting at its disposal their facilities and the plans which they had already made.

"The CHAIRMAN. And those facilities and plans were accepted by the Government?

"Gen. WILLIAMS. They were accepted by the Government.

"The CHAIRMAN. And have been used ever since by the Government, have they?

"Gen. WILLIAMS. They were used for a while by the Government in the operation of the plant at Muscle Shoals"—

And so forth.

Mr. PARKER. That refers to the Alabama Power Co.

The CHAIRMAN. Yes; but they were both on the same plane with respect to this special work.

Now, what do you think would have happened if these companies had refused to help the Government during the war, because this all happened, as I recall, during the war.

Mr. HAMMITT. Mr. Chairman, I never gave that a minute's thought. Such a thing as the American Cyanamid Co. refusing to gives its assistance during the war is a thing that nobody ever would conceive of, and what would happen as a legal matter I could certainly not advise. As a practical matter, it is an absolute impossibility to conceive of.

The CHAIRMAN. Well, of course, feeling ran very high in this country during that period when we were putting up this plant. There were people who thought that any man who would refuse to do what the Government asked was a traitor to his country.

Mr. HAMMITT. I think that feeling was justified.

The CHAIRMAN. Do you know what would have happened to the company if it had point-blank refused to take any action on the ground that the law itself set forth in this statement that the plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital?

Mr. HAMMITT. Well, Mr. Chairman, I really could not speculate as to what particular form it would take, but I should say that if any company had refused to cooperate with the Government, that its punishment should have been as complete as it was possible to make it. I think that perhaps the committee may find, upon investigation, that this particular nitrate plant is not subject to the provisions of that act of 1916. I believe it is a fact that if you will examine the accounting of the War Department, you will not find any part of the nitrate plant paid for out of the appropriation carried in that particular bill. I think you will find it paid for out of appropriations for armaments and fortifications, and it may possibly be, although I would not like to pass upon the question, that that provision does not apply to the nitrate plant itself. It does apply to other parts of the offer of Mr. Ford.

The CHAIRMAN. I think the evidence before the committee is that the money that was used for building this nitrate plant was not taken out of this fund, but the money for Dam No. 2 was taken out of this fund.

Mr. HAMMITT. Yes, sir.

The CHAIRMAN. But the fact remains that all the money that is in the Muscle Shoals plants was taken from appropriations that were made for military purposes.

Mr. HAMMITT. There is not the slightest doubt about that, Mr. Chairman.

The CHAIRMAN. I was going to read what Col. Hull had to say about the matter, and I will read what Col. Hull has to say about the matter of the moral obligation. I said to him:

"The CHAIRMAN. What do you think about that moral obligation?

"Col. HULL. Ordinarily, I am strictly in favor of the Government carrying out its contracts that are duly entered into, notwithstanding that the officer, in the time of emergency, exceeded his powers."

That is the case here, probably.

But in this contract I notice it is a cost-plus contract. It is a long contract that bears many evidences of having been very carefully prepared by the attorneys for the company, and they have provided in there several very remarkable things, namely, the construction of a power-transmission line and power plant at the expense of the United States, but at the same time providing that the company takes the real estate and an option. The company can not get, ordinarily, in time of war, the right of way as cheaply or as expeditiously as the Government can, and it certainly would have been a matter of ordinary business sense when they were constructing a plant and buying real estate to do it in that way. Therefore, I believe it is a perfecty proper case to leave to Congress, after a due investigation, to determine what the equity of the matter may be.

Mr. HAMMITT. My comment on that, Mr. Chairman, is that the witness is discussing an entirely different contract, with an entirely different company, with which the American Cyanamid Co. and Air Nitrates Corporation have no connection whatever, and that whatever he may have said, whether it was well said or ill said, regarding the moral obligation in that particular transaction, has nothing whatever to do with the moral obligation in this transaction which I have been discussing.

The CHAIRMAN. The fact is that both companies, both the Air Nitrates Corporation and the Alabama Power Co. violated this positive section of the law, that, "the plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital." That is very clear to me as an expression of law.

Mr. HAMMITT. I do not think you mean to say, Mr. Chairman, though, that by taking a contract which made us the agent of the United States for the design and construction of the Muscle Shoals nitrate plant, which is all we have done, we violated the provisions of the national defense act. If that is the view, then our only escape from violating that provision would have been never to have built the plant, and the plant was needed for war purposes, and it is very fortunate that we were advised that we were not violating the law by building it.

The CHAIRMAN. That is why I asked you a moment ago what would have happened to your corporation if you had refused to come to the assistance of the Government while the Government was in a state of war.

Mr. HAMMITT. I think some means undoubtedly would have been found to have compelled us to do so.

Mr. MCKENZIE. Mr. Hammitt, how many years have you been connected with the American Cyanamid Co.?

Mr. HAMMITT. My connection with the American Cyanamid Co. developed through a connection with the Air Nitrates Corporation during the war, so that it is a matter of several years.

Mr. MCKENZIE. You are not familiar with the attempt at getting legislation in 1916 which finally resulted in section 124 of the national defense act, I take it?

Mr. HAMMITT. I have no familiarity from any personal contact with that.

Mr. MCKENZIE. Do you know of your own knowledge whether the American Cyanamid Co., represented by Mr. Washburn, appeared before the Committee on Military Affairs at that time advocating such legislation that would enable the Government to build the dams and afterwards lease the property to some corporation to operate?

Mr. HAMMITT. I would not like to testify in detail as to what Mr. Washburn had testified at that time, but I understand, while I have no personal knowledge of it, that he did appear.

Mr. MCKENZIE. You understand that that was the proposition which was submitted to Congress at that time, the American Cyanamid Co. having in mind the manufacture of nitrates at Muscle Shoals? But it was felt at that time, as some feel now, it was too big a proposition for any individual corporation to undertake, to pay the expense of construction of the dams, and therefore Congress was asked to make an appropriation to construct the dams and afterwards lease the power to some corporation.

Mr. HAMMITT. I would say this, in general, regarding any suggestions or recommendations that were made by any individuals prior to the war: While I am not a well-acquainted witness on that subject, and am very sorry that Mr. Washburn could not himself be before the committee, but he is prevented from being before the committee by illness, which has prevented him from attending to business for a period now of more than a year, and I will say, in general, that any recommendations regarding the disposition of that water power project made prior to the war and made prior to the enactment of the general Federal water power act, were based upon conditions both as to water power development and as to nitrate development, which are so radically different from the present conditions, that it would be very unwise to follow those earlier recommendations in dealing with the present situation.

Mr. MCKENZIE. At any rate, you are well aware of the fact that when such a proposition as I have stated was advocated at that time, did not materialize, we enacted section 124, as it now appears, of the national defense act, which provides for the construction by the Government and the operation by the Government of plants for the manufacture of this particular product which can be used in the manufacture of munitions, and is also useful in the manufacture of fertilizer.

Mr. HAMMITT. And I am quite sure that Mr. Washburn never, in any of his testimony, recommended that kind of a provision.

Mr. MCKENZIE. No; I understand that; but I say that is the situation now, that the law provides in section 124 that the Government shall operate this

plant, as the chairman just read a few moments ago, not in conjunction with any other company.

Mr. HAMMITT. Yes; and, of course, unless you change that law you could not possibly accept the proposal of Mr. Ford.

Mr. MCKENZIE. Yes. Now, coming down to the period of the war and this particular contract, a copy of which we have before us, can you tell the committee just how the American Cyanamid Co. came to enter into such a contract? Who took the initiative in that matter?

Mr. HAMMITT. The initiative, at the time the contract for the design and construction of the plants was entered into, was taken by the Government. Prior to that time, the American Cyanamid Co., having information that was the same information that led the Government ultimately to enter into this kind of contract, called the matter to the attention of the Government and recommended to the Government that they provide themselves with protection.

Mr. MCKENZIE. Did representatives of the American Cyanamid Co. go to the Ordnance Department with certain recommendations or plans or suggestions, or did some one representing the Government come to the American Cyanamid Co., and if so, if you know, tell us how it was done, and the name of the representative or representatives of the Government.

Mr. HAMMITT. I can not give you any detailed testimony on that subject. I can state, in general, that the contract under which the Muscle Shoals Nitrate Plant was designed and built was written as a result of conferences to which the American Cyanamid Co. was invited by the Government, rather than conferences to which the American Cyanamid Co. had invited the Government.

Mr. MCKENZIE. I was assuming from what you stated about the patriotic motives of the American Cyanamid Co., and their great desire to help the Government at that time, that they, perhaps, went to the Government and made certain suggestions, but I understand you now to say that the representatives of the Government came to the American Cyanamid Co., and, of course, the American Cyanamid Co. controls patents covering the manufacture of this particular form of nitrate; is that true?

Mr. HAMMITT. Yes; but the American Cyanamid Co. had at a previous time made representations to the Government recommending what it believed the proper course for the Government to pursue for the protection of the Government in its nitrates supply, and those suggestions having been made, and not having been, as I remember the situation, particularly well received at that time, the American Cyanamid Co. had no occasion for any further communications with the Government on the subject, and would have been justified in believing that the Government was more fully advised than the American Cyanamid Co. as to whether such provision should be made.

Subsequently, however, the Government invited the American Cyanamid Co. into conference, and it was as a result of that invitation that the negotiations were entered into that led to the writing of this kind of contract.

Mr. MCKENZIE. You are aware of the fact, Mr. Hammitt, that during the war we had down here in Washington what was known as the Council of National Defense, and we had organizations and suborganizations there representing every possible phase of manufacture of the necessities of war. Now, can you not tell the committee just who it was that came to the American Cyanamid Co. and entered into these conferences with the American Cyanamid Co. to do this work?

Mr. HAMMITT. I am very sorry I can not; no, sir.

Mr. MCKENZIE. You can not?

Mr. HAMMITT. I can not.

Mr. MCKENZIE. Who can tell us?

Mr. HAMMITT. I would be very glad to prepare a complete history of that for the committee and place it in the record if that would serve your purpose.

Mr. MCKENZIE. Yes; we just want to know how this was brought about.

Mr. HAMMITT. Yes, sir.

Mr. MCKENZIE. So we can call on the representative of the Government. What I am driving at is to get the history of the matter.

Mr. HAMMITT. Yes.

Mr. MCKENZIE. Now, at any rate, you held conferences, and your company, as I understand it, was imbued with the desire to do its patriotic duty to the Government in time of war, and you entered into conferences with representatives of the Government and started in to prepare a contract. When you did

that, strangely, it seems to me, you employed, perhaps the most noted lawyer in the United States, Charles Evans Hughes, to come into that conference as your representative. Now, for what purpose?

Mr. HAMMITT. Mr. Hughes was called for the purpose of advising regarding the form of protection that could be provided for the American Cyanamid Co. against the thing which it was creating during the war being used after the war for the purpose of destroying it. I should like to make it clear that Mr. Hughes was not retained, generally, for the purpose of representing the American Cyanamid Co. in the negotiations for all provisions of the contract, and that the retaining of Justice Hughes was subsequent to the submission of the question of whether he should be retained to the Government's representatives, and it was with their approval.

Mr. MCKENZIE. But he was employed prior to the execution of this contract?

Mr. HAMMITT. Yes, sir.

Mr. MCKENZIE. And sat in the conferences?

Mr. HAMMITT. Yes; sir.

Mr. MCKENZIE. I would like to get all the light I can on that proposition, because it seems to me to have been a very simple thing. Here was the American Cyanamid Co. engaged in the manufacture of certain materials used in explosives, knew how to put up the plants, controlled the patents, and out of patriotic impulse they wanted to help the Government, and the Government wanted a plant put up down at Muscle Shoals where they could manufacture this material which was necessary in time of war. Now, it seems to me that that was a simple proposition and did not require any lawyer such as Mr. Hughes to enable your company to help construct a plant that would assist the Government in time of stress, and your statements about the patriotic motives of your company are very commendable. I think it is very proper they should have that sort of feeling, but why they should call in Mr. Hughes or any other lawyer to help draft such a contract as I have in front of me now, I can only understand in one way, and I want you to explain that. Is it possible that the American Cyanamid Co. at that time was figuring to forestall the Government from using the property which it was employing them to construct, and for which, as you say, they paid them $1,500,000 for their services; is that what Mr. Hughes was in this conference for at that time?

Mr. HAMMITT. Now, may I begin at the last end of your statement?

Mr. MCKENZIE. Yes.

Mr. HAMMITT. Because I do not like to have the record continually filled up with the statement that we were paid $1,500,000 when it is not a payment of $1,500,000 if you give that to me and take $1,200,000 of it right back, is it?

Mr. MCKENZIE. Well, I would say that if I was paid $1,500,000 as an attorney during the war for performing some service, that I receive the money and, of course, if the Government took part of it away in taxes, that is another proposition.

Mr. HAMMITT. Yes; but you would not consider you were coming out of that operation with a profit if you received it in one hand and had to give it back with more, too, in another hand.

Mr. MCKENZIE. That is true.

Mr. HAMMITT. And as I have stated, that is exactly what happened in this case.

Mr. MCKENZIE. We will not argue that proposition.

Mr. HAMMITT. Now, in the second place, the reason we sought the best legal advice we could get was because there were important legal questions as to how the United States Government could protect, by agreements, the American Cyanamid Co. against the property which we designed and built for the Government during the war being used to destroy the assets of the American Cyanamid Co. after the war. There were important legal questions relating to that. What they were I can not tell you, but they were sufficiently important so that we consulted the Government about the advisability of retaining Justice Hughes, which we suggested, and which with the Government's consent we did.

Mr. MCKENZIE. At that time the American Cyanamid Co. had a practical monopoly, did it not, of the manufacture of this product?

Mr. HAMMITT. It did, and except for the fact that it has built a plant that the Government now owns and that it has given the Government a license to operate under its patents, it still has a monopoly, and that monopoly is built just exactly the same as monopolies generally are built in the chemical industry, by first pouring your money and energy into the development of a thing and

then hoping you will be allowed to keep it long enough to get your money back and a profit.

Mr. McKENZIE. Now, that brings me right back to my first point: Is it a fact that you employed Charles Evans Hughes as your attorney to prepare such a contract that you would absolutely be secured in the continuation of that monopoly?

Mr. HAMMITT. I would like to modify that only to this extent: Not to prepare a contract, but to advise regarding the form of protection that could be put in that contract, in order that we should have the very thing that is specified here, the right to buy that plant at Muscle Shoals on as good terms as you are willing to sell it to anybody else.

Mr. McKENZIE. That absolutely prevents any competition, does it not?

Mr. HAMMITT. No; it does not prevent competition, provided Mr. Ford or somebody else is willing to purchase it on terms more favorable to the Government than we are willing to purchase it on. If we are willing to purchase it on as good terms as anybody else it gives us protection. If somebody else is willing to offer the Government better terms than we will accept, it gives us no protection.

Mr. McKENZIE. Is it a fact that the American Cyanamid Co. has, for a number of years, had its eye on this particular plant at Muscle Shoals, and at no time was it taking any chances on anyone getting in there, either the Government or some lessee of the Government who might enter into competition with that company, and in the preparation of this contract, was not that one of the vital propositions you had under consideration?

Mr. HAMMITT. That question is also in two parts. In the first place, I do not know it to be a fact that the American Cyanamid Co. has had its eye looking in the direction of Muscle Shoals for a long period of time. It certainly is a fact, as the Congressman has suggested, when we got into negotiation with the Government looking to the design and construction of a plant four times the size of a similar unit in one of our own plants we considered it vitally important that there should be some protection against that plant being used in competition with us after the war. If there had not been a war there would not have been any plant at Muscle Shoals, certainly not built on those terms. Since there was a war, and by reason of the war need we provided that plant for the Government, we thought it very necessary that we should have protection against the use of that plant to destroy our investment after the war. In regard to the matter of protection I might say that the contract provided that we should be permitted to buy it on as good terms as anybody else.

Mr. McKENZIE. You are a business man, I take it?

Mr. HAMMITT. Yes, sir.

Mr. McKENZIE. You are somewhat familiar with the practices of business men in large corporations?

Mr. HAMMITT. Yes, sir.

Mr. McKENZIE. Do you think it would be possible for any outsider, other than the American Cyanamid Co., under all the existing conditions, the American Cyanamid Co. controlling the patents and having an absolute monopoly of the situation, to come in and pay a price that the American Cyanamid Co. would be willing to pay in order to keep this proposition blocked?

Mr. HAMMITT. I will say that I do not think it is at all likely that anyone else can afford to pay the Government a better price than the American Cyanamid Co. can afford to pay the Government for the Muscle Shoals plant.

Mr. McKENZIE. Then this is the situation: The millions of agriculturists of this country and those believing in the national defense feature of it are interested in the development of this particular proposition. You come to us very frankly—and I am not censuring you for it—you come very frankly putting your cards on the table, and ask this Congress not to take any action that would disregard a contract that was entered into by the American Cyanamid Co., and this Government when we were at war that would absolutely shut out the agriculturists of this country, or the Government, in the purchase of the materials to make explosives, and put them absolutely at the mercy of this company which has a monopoly; is that not the question?

Mr. HAMMITT. I should say it is not.

Mr. McKENZIE. That is the way it looks to me; I may be wrong about it.

Mr. HAMMITT. Because, in the first instance, we have, under the provisions of this contract, no right to purchase that plant unless we pay for it as much as anybody else is prepared to pay. In the second place, I assume you have had some experience in business.

Mr. McKENZIE. Not very much.

Mr. HAMMITT. I assume, at any rate, you will recognize the public policy back of the patent law, and you recognize that the United States patent law has a particular provision which provides that any person who has been granted a patent shall have the exclusive use of that patent for a certain number of years, for the purpose of encouraging invention, and you would certainly consider it unconscionable if, after investing money in the development of processes and the acquisition of patents and the finding of a market for a material on the strength of the existing laws, because of the interposition of a war the protection that those laws extend to everybody should be taken away from a particular company.

Mr. McKENZIE. I do not suggest any such thing. I think the owner of a patent is entitled to the protection of the law and royalty for the use of the patent by anyone else.

Mr. HAMMITT. But you do not require any other patentee to allow the use of his patent upon the payment of a royalty. You give him, under the provisions of the patent law—and if you do not believe that is a proper public policy, I think you should go about changing it—protection for a certain period of time. We invested our money on the faith of that protection. We ask that that protection be not taken away from us by reason of the interposition of a war emergency.

Mr. McKENZIE. If this contract is good under existing law, then in my judgment, the law itself needs amendment, because the way I view it, a contract of this character ought to be void on the ground of public policy.

Mr. HAMMITT. I am sorry you feel that way about it.

Mr. GREENE. Mr. Hammitt, you have called attention to article 19 of your contract, that is, the contract of the Air Nitrates Corporation and the United States of America, regarding the construction of the Muscle Shoals plant. You make out that you have, by the terms of article 19, the right to purchase the same upon as favorable terms as the United States is willing to accept from anybody else, and therefore, before the United States shall sell the same to any other party, you shall have the right to meet those terms, if you desire. Have you made any offer to the Government, based upon the provisions of article 19?

Mr. HAMMITT. We have not.

Mr. GREENE. In view of the fact that other offers have been made, do you wish to have yourselves now regarded as competitors for the plant on the terms of article 19?

Mr. HAMMITT. We do, on the terms of Article 19, to this extent. Of course, we did not make an offer of the character of the one that is under consideration before this committee, because, frankly, we would not have had the nerve to present that kind of a proposition to the United States Government, and we believe if we had come down here and presented that kind of a proposition to the United States Government, most of the comment would have been upon the extent of our nerve. But if the committee definitely decides that, contrary to what we frankly believe is public policy, the United States Government shall go into the business of subsidizing a particular manufacturing operation, then we want to bid for the subsidy.

Mr. GREENE. Is that answer to be interpreted to mean that if the United States Government will itself continue to hold the property and administer it, or let it stand out in a stand-by condition, you make no offer?

Mr. HAMMITT. At the present time we would not make any offer, because we do not believe it is practicable to have a commercial operation of that nitrate plant at the present time, unless the United Sates Government will make up the losses by providing a subsidy. And it never occurred to us that the Congress was going to embark the Government upon that kind of indirect competition with private business. But if the Congress does determine upon that policy then we must make our business arrangements under such policy as the Congress gives us, and we would want to have the subsidy, very likely, rather than have that subsidy given to somebody else to compete against us.

Mr. GREENE. But how can you get your proposal considered if you wait until Congress determines it shall be the policy to accept Mr. Ford's offer?

Mr. HAMMITT. If the Congress decides that, we think that the proper action to be taken is to remove the barriers existing in the law and enable a proper administrative officer to make a binding offer to the Air Nitrates Corporation, as provided in the contract, and give us an opportunity, as provided in the contract, to consider that offer.

Mr. GREENE. I do not understand exactly what you mean by that. What do you mean by that?

Mr. HAMMITT. I mean that under the existing law, obviously Mr. Ford's offer could not be accepted.

Mr. GREENE. I do not know how you can say that. You are assuming more than the committee itself has made up its mind to propose.

Mr. HAMMITT. I understand it never would have come to Congress unless it was understood that it could not be accepted.

Mr. GREENE. You are reading into the record something that the committee has not passed upon. There is no testimony before the committee to that effect.

Mr. HAMMITT. I understand, at any rate, that the Secretary of War felt that he had no authority to make a contract with Mr. Ford.

Mr. GREENE. He has no right under the law to dispose of War Department property without the sanction of Congress. Even if it be an ordinary ammunition wagon, he can not sell it.

Mr. HAMMITT. But he has general authority to dispose of War Department property.

Mr. GREENE. Not including anything of this character.

Mr. HAMMITT. My judgment is that you would serve the best interests of the United States, if you desire to dispose of this property, by giving to an administrative officer general authority to dispose of this property on the best terms that can be obtained.

Mr. GREENE. Is that to be interpreted to mean that instead of accepting Mr. Ford's offer outright if Congress shall elect to provide that the property may be put into shape to be offered for competitive bids, you will then be a bidder?

Mr. HAMMITT. I would not be prepared to state, in behalf of the Air Nitrates Corporation or the American Cyanamid Co. that under any circumstances, if you separate the nitrate plant from the water-power project, that we would be prepared to offer a bid. But if the committee decides to deal, in the name of a nitrate proposition with what really is a water-power proposition, then I am quite certain in my own mind that the American Cyanamid Co. would like to be considered as a competitive element in the bidding.

Mr. GREENE. And until Congress elects one policy or another, you do not make any offer?

Mr. HAMMITT. No; we do not.

Mr. GREENE. And you stand, admittedly, as a dog in the manger?

Mr. HAMMITT. Not at all; because I will say this, Congressman, that while I can not speak, of course, on a matter that obviously must be submitted to the board of directors of the American Cyanamid Co., without it first being so submitted, that if the matter would be put in such a shape that I could submit to the board of directors of the American Cynamid Co., and they to their stockholders, the acceptance of rejection of this property on the terms proposed by Mr. Ford, then my personal opinion is it would be accepted.

Mr. GREENE. Let us see how we get at that. When the United States Government did ask for bids on this property—that is, the War Department—did your company submit any bids?

Mr. HAMMITT. We were not asked to submit a bid on the nitrate plant in the first instance, but if we had been asked to submit such a bid, we would have been compelled to tell the War Department that there was no possibility of the operation of this nitrate plant at this time, or for a substantial period to come, on a commercial basis without loss, and we would not consider it proper to submit to the Government a proposal that the Government make up that loss. What we did receive was an inquiry as to whether we would be interested in proposals regarding the development of water power, and we advised the Chief of Engineers of the Army that our only connection with the Muscle Shoals property related to the nitrate plant, and that we could not see at present any way of making the nitrate plant a profitable customer for the water power, and that therefore it did not seem to us that we were able to help him any, but if he desired anything in particular from us in the way of cooperation, we would be glad to give it.

Mr. GREENE. You did not bid, but Mr. Ford did?

Mr. HAMMITT. Those two statements are certainly correct; yes, sir.

Mr. GREENE. Now, that Mr. Ford has bid, you interpose your right to prevent the execution of any contract with him, but you do not offer, on your own account, to take up, by a definite proposition from yourselves, property which you seek to prevent going to Mr. Ford?

Mr HAMMITT. Congressman, I do not believe, frankly, that the United States Congress is ever going to approve the principle of the Government dipping down into the Treasury to support a manufacturing operation. And I do not want, personally, to see the American Cyanamid Co. or the Air Nitrates Corporation put in the position of competing for that kind of subsidy, nor do I, as a matter of public policy, want to see the United States Government granting that kind of a subsidy to somebody else.

However, after all, when we get down to it, no matter how much you and I are discussing this from the point of view of the nitrate plant, this is not a nitrate-plant proposition; this is a water-power proposition, and this nitrate plant end of it is nothing except what somebody offers for the purpose of attracting a certain support in order to enable him to get a cheap water-power contract. We never conceived of the Muscle Shoals project in that light, and because we did not conceive of it in that light we, of course, were not in a position to write anything like this offer which Mr. Ford has proposed.

Mr. GREENE. I understand that very likely some phases of your suggestions might meet with a response from other persons in the room with regard to the matter of public policy. But that is not the issue involved. The issue is one plainly of the construction of contractural relations between the two parties and your alleged intervening right. What use do you intend to make of your right? The Government has asked you to make a proposition, but, as you explained, you have refrained from doing so because your idea of public policy would not permit you to make such an offer. In the meantime another man who has not the same idea of public policy but whose idea of public policy is quite different, has made an offer. Upon the receipt of his offer and notice to the public that he has made such an offer, you interpose your alleged intervening right. Now, the question is one concerning which the Government does not intend to let anything remain in suspense. It must dispose of one or both of these propositions. It must either accept or reject Mr. Ford's offer. Do you then insist that your regard for a proper public policy is so great that you will neither make an offer yourselves nor allow the Government to accept Mr. Ford's offer?

Mr. HAMMITT. I am firmly convinced that this whole problem can be solved much better, and you could get along with it very much faster if you removed the existing legislative barriers with which you obstruct the possibility of the disposition of this property, by placing an administrative officer in a position to negotiate. Then you may get some one, perhaps, who is willing to negotiate, but anybody who can not capitalize the advertising end of his proposition can not negotiate with the Congress of the United States. I could not negotiate directly with Congress as a Congress, so that I would talk across the table with you and you ask me to commit my company to something; you are only one of 435 men in one House. You could get along much faster and much better the other way. That is the fact, and that, as a man of some experience in business, you and other members of the committee recognize.

Mr. GREENE. You express your distrust of the court to which you submit your testimony.

Mr. HAMMITT. No: I simply suggest my view, very respectfully, to the effect that the function of this court is to perform within its legislative function, and my appeal to the committee is based upon a recognition of its legislative function.

Mr. GREENE. All right. Then, it seems, taking you at your own words, that you have not appeared with a definite, affirmative proposition; that instead of adopting Mr Ford's course and making an offer your suggestion is that Congress shall write some new legislation that will enable you to make an offer, and you have confined yourself in your statement simply to intervening your right. These suggestions that we change the law in order to enable you to come in appear to be second thoughts.

Mr. HAMMITT. I felt that the particular function that I had before the committee was to present this feature of the proposition as it bears upon the Ford offer, and I hope I will not be ruled out of court on the ground that I have not gone further than that.

But if you desire my suggestion, which I did not have the temerity to offer, as to what you ought to do about this Muscle Shoals situation, I will be perfectly glad to present it to you.

Mr. GREENE. That is exactly what we want.

Mr. HAMMITT. In the first place, I would separate the two propositions, which do not belong together. I would deal with the water-power proposition

as a water-power proposition, and I would deal with the nitrate proposition as a preparedness proposition.

Now, first, as to the water-power proposition, I would provide by general law for the development of the water power down there, by private capital under the provisions of the Federal water power act, the same as every other water power in the United States is developed, and I would remove the present restrictions in the law against the development of that water power under the general provisions of the water power act, without regard to the nitrate property.

Here is what I would do in regard to the nitrate property, or what I would advise the United States Government it should do. I would keep that nitrate plant unoperated, in a stand-by condition, which is 100 per cent better preparedness anyway than putting it in operation. If you want to know why that is so, I will be very glad to go into it, although I did not believe it was my function before this committee to do so. That is 100 per cent better preparedness. I would say keep it until such time as there is a possibility of its being operated commercially without a subsidy, and without bankrupting the operator, and when that time came I would lease it or sell it, or do whatever seems wise to do, and I would protect the Government's interest and mesh this into the general scheme of nitrate manufacture.

At the present time there is not any commercial operation of that plant that is possible without a subsidy, and that is what I would recommend to the Government, because there is no commercial operation of that plant now possible without a subsidy.

Mr. GREENE. Let me ask a question right here.

Mr. HAMMITT. Certainly.

Mr. GREENE. You laid stress upon the words "that plant." Is there not something in the local or physical condition that makes you have the view that it can not be operated without a subsidy?

Mr. HAMMITT. It is both in the local and physical condition, yes. The plant can not be operated commercially, Congressman, because it is not capable of making anything that has a market on which you could get back the cost of production.

Mr. GREENE. You are speaking of the nitrate plant?

Mr. HAMMITT. I am speaking of the nitrate plant; yes sir. It is not capable of being operated on a basis that would carry any overhead. It is simply not a practicable commercial proposition. I will say this to you also in order that you may fully appreciate our position. The very minute we feel that there is a possibility of operating the plant down there without losing money we will come to the United States Government with a proposition to operate that plant, if the way is still open.

Mr. GREENE. Your last remarks, I suppose, are directed to the physical condition of the plant, as the reason why it can not be operated without overhead.

Mr. HAMMITT. It is designed for the manufacture of a war explosive, ammonium nitrate. It can not be operated on ammonium nitrate, and nobody ever suggested it could be so operated at a profit. There is no market for ammonium nitrate that the full product of that plant would amount to, and there is no market for the ammonium nitrate that would be made there that would pay the cost of production.

Now, it can be, with certain additions and alterations, converted to the manufacture of various nitrogenous fertilizer materials. The only one of those that has a large enough market to make it an attractive operation for a plant anywhere near approaching that size is sulphate of ammonia, and the cost of producing sulphate of ammonia at Muscle Shoals would be from 30 to 50 per cent more than the present wholesale market price of sulphate of ammonia. That is the reason I say you can not operate that plant commercially at the present time.

Mr. GREENE. Then your proposition is if the Government should put it into such condition so that it may be operated commercially you will make a bid for it.

Mr. HAMMITT. If the Government retains it as a plant capable of producing ammonium nitrate, and that is the only field we have explored in our consideration of the matter, of course, because we have always considered and have been advised by the War Department that the preparedness feature of that situation was the paramount one, we do not know what they could change it to that would make it profitable in operation.

Mr. GREENE. Have you come forward with any helpful suggestions?

Mr. HAMMITT. I am sorry to say we have not been able to develop any suggestions that were really helpful. We have spent a good many hours discussing

the matter with representatives of the Department of Agriculture and the War Department, and we have made rooms full of figures trying to work out some proposition that would make the operation of that plant a feasible operation. We have gone at it seriously, and with a great deal of experience going back over a number of years. And I want you gentlemen to appreciate that I am not holding anything back at all when I say we know of no way by which that plant can be made commercially practicable.

Mr. GREENE. My questions are not to be construed as necessarily hostile. I want the facts.

Mr. HAMMITT. I have not so construed them.

Mr. GREENE. I want to know what your situation may be defined on the floor of the House to be, and so defined with your own authority back of it. It is apparent that so long as the Government will do nothing with this plant, will not let it get into the hands of any possible competitor of yours, you do not want the plant yourselves.

Mr. HAMMITT. Only with this modification, and that is that the present situation might change with market conditions, or if there were development in the art that would make it possible to have a successful commercial operation of a plant of that character. But under present conditions, and the conditions that we believe will obtain for a period of years, that is exactly the position of the cyanamid company.

Mr. GREENE. If somebody else makes a proposal that they will take the plant with such improvements and experiments as they may make and produce, how about that? Will you make any competitive offer in connection with that?

Mr. HAMMITT. We will not be interested in competing with them if they propose to do it at the expense of the United States Government. Under those circumstances we will not compete with them. We will not propose that the Government of the United States extend a subsidy, but as soon as it becomes apparent that the Government proposes to extend a subsidy to somebody else to compete with us, then we would want an opportunity to bid on it.

Mr. GREENE. I do not see after all but that the situation simply depends upon what Congress may do by and by, and therefore it is not merely a conjectural situation, but it is an impossible one. After Congress has done that it is too late for you to do anything.

Mr. HAMMITT. Would it be assisting this matter to have you instruct me to go back to New York and consult with the board of directors of the American Cyanamid Co. regarding what kind of a proposition, involving a heavy subsidy from the Government, they could offer to the Congress?

Mr. GREENE. The committee has no authority to offer any specific terms upon which a proposition may be based. You are aware of the fact that we are simply an advisory committee and not the final deciding power.

Mr. HAMMITT. Yes; and I think in disposing of this matter it is not a legislative but an adminstrative matter, and the legislative function is to provide certain general provisions of law under which the matter can be disposed of by an administrative authority.

Mr. GREENE. Then under those circumstances how would you figure it? In doing business with the Government you have to do things "as is," do you not? You do that in the commercial world?

Mr. HAMMITT. Yes; but we do not make much progress unless Congress makes the "as is" a condition under which progress can be made.

Mr. GREENE. You have, only a few sentences back, proposed how we might make that progress.

Mr. HAMMITT. No; I did not understand that I was making any proposition. I was asking you whether it would assist the committee to do a certain thing.

Mr. GREENE. But you defined what you would do with this property if you had control of it. That is the first time you put up an affirmative proposition. If you have that affirmative proposition in mind, why are you not empowered, in your own relationship to your company, to ask them to submit some proposition on the basis of that reason? Mr. Ford apparently went to work on the basis of his own reasoning, assisted by the advice of his experts, and submitted his proposition and asked Congress to come up to it. There is no existing law in reference to many of the details of Mr. Ford's proposition, and that is why he makes an affirmative proposition. Why do you not, having your own idea of what the public policy ought to be, and having your own

idea which you have expressed to the committee of the commercial status, make your own proposition and ask Congress to come up to it?

Mr. HAMMITT. You do not know the board of directors of the American Cyanamid Co. as well as I do if you think I can go into a meeting of that board of directors and suggest that we propose to the United States Government that the Government subsidize us to operate that nitrate plant.

Mr. GREENE. I did not make any such statement.

Mr. HAMMITT. That is the only basis on which we would operate the nitrate plant, or on which Mr. Ford can operate it, or anybody else, and make it a commercial success.

Mr. GREENE. You are here to oppose a subsidy to Henry Ford?

Mr. HAMMITT. Absolutely; Yes, sir.

(Thereupon the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met, pursuant to recess, at 2 o'clock p. m.

STATEMENT OF MR. J. O. HAMMITT—Resumed.

The CHAIRMAN. Mr. Hammitt, Mr. Hull would like to ask you some questions.

Mr. HULL. You spoke of a subsidy this morning.

Mr. HAMMITT. Yes, sir.

Mr. HULL. In what way do you think we are subsidizing Henry Ford?

Mr. HAMMITT. If the offer of Mr. Ford is accepted, Mr. Ford will receive very cheap water power at the expense of the United States Treasury because, in the first place, Mr. Ford proposes to pay a very much smaller interest rate to the United States upon the additional money the United States invests in the water power than he would be required to pay if, like all the rest of us in industry, he was compelled to finance the development of the water power in the usual way; and, secondly, Mr. Ford does not propose to pay any interest at all upon the amount of money the Government already has invested and a considerable part of the amount which the Government will have to additionally invest, and so I am sure, if you set the figures down, you will find that a considerable part of the cost of that water power will be paid, first, by the credit, and then by the actual expenditure by the United States of cash which will not be reimbursed to the Government. It was my impression that the committee had gone into that question thoroughly enough to have the exact financial facts relating to that offer before it, but if the committee has not such an analysis I should certainly be very glad to furnish one to the committee.

Mr. HULL. I do not know what the rest of the committee has, but I have gone into it far enough to say that in my opinion the use of the word "subsidy" is wrong. It is not a subsidy at all.

Mr. HAMMITT. Then suppose we say——

Mr. HULL (interposing). It may be a good bargain. I am not saying anything about that, but the use of the word "subsidy" is unfortunate, in my opinion.

Mr. HAMMITT. Then suppose we say, Congressman, instead of using the word "subsidy" which, of course, I use with a definition of my own in mind, that Mr. Ford would receive aid out of the Government Treasury in order to make up the losses which he would certainly incur from any operation of the nitrate plant he engaged in. Now, that is exactly what I meant by subsidy.

Mr. HULL. As I understand it, your company will not make an offer under any circumstances similar to Henry Ford's; is that true?

Mr. HAMMITT. No; my company will not come to the United States Congress and request the United States Congress to give it a subsidy; but I will say, Congressman, that if the Congress adopts a policy, which we understand is not the Government's policy, of dealing with matters of this sort by giving aid out of the Government Treasury and indicate that the best terms upon which it is prepared to give such aid are the terms involved in Mr. Ford's offer, and then, in carrying out this particular contract, puts that matter in such shape that I can take it to the board of directors of the American Cyanamid Co., it is my firm belief, of which I am just as certain as one can be of what will be the action of another group of men exercising their individual judgment, that we would accept it, and yet we would not ask it, Congressman, because, frankly, we do not believe it is in accordance with public policy that such a thing should be done.

Mr. HULL. As I understand it, Mr. Ford was asked to make an offer. Now, he has made an offer. As I understaid it, notice was sent to all companies to make an offer, and your company, which claims prior rights, has made no offer that gives it any prior rights.

Mr. HAMMITT. What rights my company has, Congressman, do not depend upon any offer made by my company. In the second place, neither Mr. Ford, as I understand it, nor the American Cyanamid Co., as I know the facts, was invited by the Chief of Engineers to make an offer for the nitrate plant at all, and we are not in the water-power business. We advised the Chief of Engineers that our interest in the Muscle Shoals situation could, naturally, in view of the business we are in, be only in relation to the nitrate plant, and as to that, we could see no way of making it a profitable customer for the water power, and that, therefore, we were not in a strong position to make any suggestion regarding the water power.

Mr. HULL. There is the peculiar part of your argument, as I see it. You claim that Mr. Ford is going to lose money, in one place.

Mr. HAMMITT. No; Congressman——

Mr. HULL (continuing). And then you claim in another place he is receiving a subsidy.

Mr. HAMMITT. And the two go together.

Mr. HULL. One moment. And you say you do not want to make an offer on the part where he would make money, but you would like to make an offer where he would lose money, perhaps; is that your proposition?

Mr. HAMMITT. Not at all.

Mr. HULL. It sounds like it to me.

Mr. HAMMITT. We see no way, without aid of the Government Treasury, that any company can afford to undertake at the present time the operation of that nitrate plant, and we will not ask aid out of the Government Treasury. Mr. Ford will not lose money on his proposition if it be accepted and sustained in the courts, in my opinion, because the losses will be borne by the United States Government through its contributions to the cost of the large and important blocks of power that Mr. Ford will receive, and it is entirely conceivable that by financing a valuable thing like a water power for an individual or a corporation you can make up to it enough of a premium to justify it in operating a manufacturing plant at a loss, and that really is the essence of the Ford proposal. It is not a fertilizer proposition, primarily, but it is a means of obtaining at the expense of the Government Treasury a very cheap water power.

Mr. HULL. But all the rights you have under article 19 are contained in this language:

"The agent shall be given the first opportunity (for a reasonable period of time not to exceed six months after receipt of written notice stating the determination of the United States to dispose of the same, and the material terms upon which such disposition will be made), to purchase the same upon as favorable terms as the United States is willing to accept therefor, before the United States shall sell the same to any other party."

Mr. HAMMITT. Yes, sir; and we have not yet received that written notice. If it is desired——

Mr. HULL (interposing). But you know about it. You have that notice. You would not be here if you had not.

Mr. HAMMITT. Mr. Hull, if you will again direct your attention to the provision you have just read, you will observe it provides this procedure: First, the United States determines to dispose of the plant. That is the first thing that must be done. Now, the United States has not determined any such thing as yet. That is a matter that is under consideration here. That has not been determined and that is the first step. The second step is that the United States makes a written offer to the American Cyanamid Co. on what it considers the best terms it is prepared to accept, and then the American Cyanamid Co. having been given a reasonable time to consider that offer indicates whether it will purchase the plant on those terms or not. If it will not purchase the plant on those terms, then you are entirely free to deal with Mr. Ford or with anybody else unless you improve your terms. You must give us an opportunity to purchase this plant on as good terms as you are making with anybody, but if there is anybody who is prepared to purchase the plant on better terms than the American Cyanamid Co. will pay, then you can dispose of this option as soon as you place the matter in the hands of some administrative officer who can attend to an administrative job of that character, and it is not a matter of difficulty, and I do not believe it would take any six months.

Mr. HULL. I will say right here that I am somewhat of a stickler for keeping our obligations, but I certainly am not a stickler for keeping obligations with a company that does not try to protect its rights and hides behind hair-splitting technicalities such as you have mentioned here as a reason for not making an offer. You have known, the country has known, everybody has known, practically, that we are going to dispose of this property, in all probability. You have filed no offer. You make no pretense yet to making us an offer, and then you come in here and say that this committee can not dispose of this property; that you want it turned over to somebody else that you can do business with across the table. I might say that in my opinion there has been too much of that kind of business done across the table and not enough of it out here in the open where people can see what is being done.

Mr. HAMMITT. I hope, Mr. Hull, I have not made any suggestion that a reference of this matter to a member of the President's Cabinet would have the effect of initiating a kind of negotiation that could not stand the light of day, and, surely, Mr. Hull, you must recognize that a company like the American Cyanamid Co., whose total assets are not more than approximately one-tenth of the bank account of the Ford companies can not undertake to submit an offer in the existing state of the law with the same facility that Mr. Ford, with his control of more wealth than any other individual in the world, can undertake to submit. It is necessary, before we can make such an offer, that the matter be gone over with our bankers, with those who will be responsible for the financing of the proposition; and it is a matter of very much more difficulty, I assure you, to even excite the interest of a banker on a proposal that the contract never contemplated we should be required to make in order to protect our interests, made to the United States Government at a time when the United States Government requires a procedure through Congress and the enactment of laws in order that that proposition may be considered. Now, I think it is most unreasonable, especially after agreeing with the American Cyanamid Co. that it should have this opportunity of having the matter submitted to it and an opportunity to give it consideraion—I think it is most unreasonable now to insist that the American Cyanamid Co. do a thing which only a man in Mr. Ford's peculiarly fortunate position would be in a position to do.

Mr. HULL. Yes; but you forget that we passed a law especially prohibiting this very thing of dealing with a private corporation.

Mr. HAMMITT. Yes; and Mr. Ford proposes now that you do so.

Mr. HULL. But it seems as though those who were to administer the law were persuaded, at least, by some one, to make a contract that defied the law, and then you come in here and get under that contract which was in express defiance of the law of Congress.

Mr. HAMMITT. Now, Congressman. I can clear that situation up, in the first place, and help, I think, the whole discussion of this question, by pointing out that the law to which you refer—the national defense act—does not apply to this contract at all, has nothing whatever to do with the work that was done under this contract. You have several different things down there at Muscle Shoals, and the one thing, the one important thing, that Mr. Ford is interested in and that the Chief of Engineers asked people to make offers for is the water power, and that water power, so far as it has been constructed, has been constructed under the provisions of the national defense act and with appropriations made by it. The nitrate plant was not built under the national defense act and did not come under the provisions of the national defense act. It is not held by the War Department that the national defense act has anything whatever to do with the nitrate plant or with this contract. So that the suggestion that this contract is a violation of the national defense act does not apply at all. The national defense act had nothing to do with it. This plant was built just like a cantonment was built, with no relationship whatever to the provisions of that section of the national defense act. I apprehend that that situation has not been fully understood. If you refer that same question to the Judge Advocate General, I am sure he will give you the same answer, as I have noted from reading the testimony that War Department officials have given you that same answer in this hearing.

Mr. HULL. The Ordnance Department, as I understand, gives us an answer smewhat like that.

Mr. HAMMITT. They undoubtedly were correctly informed.

Mr. HULL. But, as I understand it, the law was broad and covered the entire project. There was not any question when we passed the law but what it did cover everything they were to put in down there. It may be that in order to

avoid this very technicality some of the men in the Ordnance Department may have taken other funds and did not take money out of this fund, but those are questions again of administration that we can not always follow.

Mr. HAMMITT. The fact is, of course, that this particular plant and this particular contract have nothing whatever to do with the national defense act. Now, what particular bearing that has on the situation I do not know, but I would like to have the fact clear before the committee.

Mr. HULL. I want to say right here that so far as I am concerned it has. I was a member of the committee when that act was passed and I supposed. and I think every member of this committee that was present at that time understood, that this entire project was erected under that act.

Mr. HAMMITT. May I perhaps help the situation a little further by pointing out that there was a nitrate plant initiated, I believe, under that act, but it was not this nitrate plant. It was not the nitrate plant at Toledo, which was started under this contract. It was not the nitrate plant at Cincinnati, which was started under this contract, neither of which was completed; nor was it this nitrate plant which was completed, but there was a nitrate plant and maybe that helps to an understanding of the situation. There was a nitrate plant initiated, I believe, under the national defense act.

Mr. HULL. Where was that?

Mr. HAMMITT. That was nitrate plant No. 1, using the Haber process, and on the opposite side of Sheffield from this nitrate plant No. 2.

Mr. HULL. Under what law was this plant constructed?

Mr. HAMMITT. I believe this plant was constructed under the appropriations for armaments and fortifications. It was constructed during the war as a war measure.

Mr. HULL. That is the fund out of which it was paid for, but under what law of Congress was it constructed?

Mr. HAMMITT. I think that has been covered in the testimony before the committee to date, but I am afraid I can not give a satisfactory answer to that question.

Mr. HULL. You say your contract was made with Mr. McRoberts?

Mr. HAMMITT. This contract is signed by Col. McRoberts.

Mr. HULL. I suppose you know Col. McRoberts.

Mr. HAMMITT. I never met him, sir.

Mr. HULL. You do say that plant No. 1 was constructed under the national defense act, and that is the Haber process plant.

Mr. HAMMITT. It is my understanding it was initiated out of the national defense act. I think they had to go to other funds to get the money to complete it.

Mr. HULL. Did your company furnish the plans for that plant?

Mr. HAMMITT. No, sir; we had nothing whatever to do with plant No. 1.

Mr. HULL. Suppose the Government should run that plant down there and operate it, would your company have any claim against the Government?

Mr. HAMMITT. That would not be a violation of this contract.

Mr. HULL. You say that you paid 80 per cent of your fee of $1,500.000 back to the Government; is that correct?

Mr. HAMMITT. The fee of $1,500,000 has not been paid. Only a part of it has been paid, and there are in our tax matters still certain matters that have not finally been determined by the internal-revenue officers, but we have paid the bulk of the tax, and there is no doubt that that would be the effect of the application of the tax law to the payment of the complete fee; that is, we would have to pay 80 per cent of it, undoubtedly, back to the Government.

Mr. HULL. But that is just the 80 per cent excess-profits tax that you refer to.

Mr. HAMMITT. It is a war tax.

Mr. HULL. If we paid you $1,500,000 for your plans on this project and you had a million and a half dollars of losses on some other project, you would not pay us back anything; is not that true?

Mr. HAMMITT. I am not sure I understand that question.

Mr. HULL. If your company operated and made $1.500,000 and we paid it, and you lost $1,500,000 in another enterprise, you would not pay us back anything at all; is not that true?

Mr. HAMMITT. No; that is one of the effects of the creation of the Air Nitrates Corporation as a separate corporation. You see, Air Nitrates Corporation had no other business in which it might lose this amount of money. So that Air Nitrates Corporation had no function, never had any function, never did anything except this one job, and Air Nitrates Corporation has not made any money.

Mr. HULL. Is that the company which at present is having a controversy with the Treasury Department as to the payment of taxes?

Mr. HAMMITT. There is no controversy that I am aware of regarding the payment of taxes, but Air Nitrates Corporation is the corporation that would pay all the taxes upon any profits or income from this construction at Muscle Shoals.

Mr. MORIN. Mr. Hammitt, there is one thing I want to get clear. As I understand it, your contention is that under the present law the Secretary of War has not any authority to dispose of this plant or of these works at Muscle Shoals, and that he has come to Congress to ask that the law be so amended that he can deal with that situation; am I right about that?

Mr. HAMMITT. I think it would be necessary for the law to be amended in order that he might deal with that situation.

Mr. MORIN. If we were to amend the law so that the Secretary of War could consider a proposition to dispose of these plants at Muscle Shoals to Mr. Ford or to any other bidder, to the best advantage to the Government, would your firm be ready to submit a proposition to the Government?

Mr. HAMMITT. If you dealt with that matter as I would recommend it be dealt with, namely, by providing for the disposition of the water-power development under the general provisions of the Federal water-power act, and then provided separately for the disposition of the nitrate plant, because one thing is a chemical manufacturing proposition and the other thing is a water-power proposition, then I think that neither my company nor any other company would be prepared to make any offer which the Government could accept for taking over the nitrate plant, because the only thing that makes the nitrate plant attractive to Mr. Ford or to anybody else is as a means of getting a cheap water power; but I am quite satisfied that if you authorize the Federal Water Power Commission to deal with this water-power development the same as all other water-power developments you will get a development and you will not have to spend Government money to get it. Now, that will be taken up, probably, not by the American Cyanamid Co., because it is not in the power business, but it will be taken up by Mr. Henry Ford or by some corporation or interest that is engaged in the power business. That would be the natural party to take up that kind of a development. That would leave the nitrate plant itself in a stand-by condition, ready for a war emergency, absolutely complete, with a capacity to produce what it was designed to produce, and a very much more valuable asset for war than if you put it into operation in time of peace, because once you place that plant in operation in time of peace it has got to find its place ultimately in the peace-time markets.

It will be supplying, ultimately, a part of the nitrates that are used in time of peace, and then when we get into a war all of a sudden we will require a considerable additional supply of nitrates, and the only way you will be able to get them from Muscle Shoals will be by depriving agriculture of the product of the Muscle Shoals plant. Whereas if you keep the Muscle Shoals plant in stand-by condition as a war reserve there will be other plants developed, always adequate to supply the requirements of agriculture for nitrates, and when you get into a war you will have an actual surplus capacity to the extent of the capacity of the Muscle Shoals plant.

Mr. MORIN. Suppose we should amend the law so as to authorize the Secretary of War to accept Mr. Ford's proposition, what would be the attitude of your company?

Mr. HAMMITT. My company would be compelled to instruct its attorneys to resist the execution of that decision in the courts.

Mr. MORIN. You stated this morning that Plant No. 2 could not be operated to manufacture nitrates at a profit?

Mr. HAMMITT. Yes, sir.

Mr. MORIN. Did that include fertilizer or fertilizer compounds also?

Mr. HAMMITT. I would be glad to broaden that statement so as to include fertilizer compounds and to reiterate it. It does apply to them, although I do not think I spoke of other compounds besides nitrogenous compounds.

Mr. MORIN. I would like to have that statement explained, because that statement has been made here several times, but it has not been explained to the committee why the plant could not be operated at a profit.

Mr. HAMMITT. In the first place, this plant is designed for the manufacture of ammonium nitrate. Ammonium nitrate is not a fertilizer material. It is not practicable as a fertilizer material for two principal reasons. In the first place, it is very much too expensive a form of fixed nitrogen for fertilizer use; and, in the second place, it is hygroscopic; that is, it takes up moisture from the air and it cakes hard and it is unsuitable for handling by the farmer or for handling in a mixing plant, and there are certain other disadvantages about it, but the general fact is that ammonium nitrate is not a suitable fertilizer material.

As it stands to-day, the plant can not make any material that is used in the fertilizer industry. The cyanamid which would be made by that plant as a part of the process of manufacturing ammonium nitrate is a crude cyanamid that requires going through another process before it becomes a suitable fertilizer cyanamid. The only materials that that particular type of plant is of use in making that find a place in the fertilizer industry are these:

First, I will mention those that we consider serious; next, I will mention the one that Mr. Swann testified about the other day, which we never had considered serious, and do not consider serious yet, as a means of working out the Muscle Shoals situation, and I will be glad to state why we do not consider that serious.

The first is cyanamid. Now, you can make that cyanamid of the Muscle Shoals plant into a fertilizer cyanamid by a relatively minor process of further manufacture for which you must provide a plant that is not there now; but the total amount of cyanamid that we, who make all of it on this side of the Atlantic to supply the entire American market, and are now operating our plant at one-third capacity because there is not market enough even to keep our plant in operation, and we are unable to recommend to the fertilizer industry that they use cyanamid in fertilizer in greater percentages than 50 or 60 pounds, under ordinary conditions, to the ton of finished fertilizer, because if you use it in larger quantities under ordinary conditions of mixing you cause a reversion of your acid phosphate, a necessary part of that fertilizer, to an insoluble form of calcium phosphate that is not available for plant food. So that you have a definite limitation upon the amount of cyanamid you can use, and that limitation, if you shut our plant down and destroyed our own business entirely and gave the whole American market to Muscle Shoals, and then had the largest consumption of cyanamid that the American fertilizer industry has ever used in the largest year, you could make all of it with less than the capacity of 2 of the 10 furnaces at Muscle Shoals. So that is not an operation that could practicably be initiated at Muscle Shoals for the use of that nitrate plant and show anything except a heavy loss.

Now, you have another fertilizer material, another fixed nitrogen material, that the experts called in by the War Department considered very much more promising, namely, sulphate of ammonia.

In order to manufacture sulphate of ammonia at the Muscle Shoals plant, you use a certain part of the existing plant; not all of it. You never can use the entire plant in making any fertilizer material. In making sulphate of ammonia or cyanamid, you would use a part of that plant that represents in actual investment something like 50 or 60 per cent of the entire plant, and then to make your sulphate of ammonia, you would add another plant, which you would have to build down there, so you would carry your materials through that nitrate plant as it exists up to a certain point where you would have the ammonia gas, and that would be gotten through the plant that exists there now, and then you would carry it off in a different direction, through a new plant you would have to build, and at the end, you would get sulphate of ammonia. The cost of producing that sulphate of ammonia at Muscle Shoals we have estimated at approximately $70 a ton. The committee has had before it the Chief of Ordnance of the Army and he has submitted an estimate which, as I remember, was $75 a ton, and the committee has had before it the head of the fixed nitrogen research laboratory of the Department of Agriculture, and he has made an estimate, and his estimate, as I remember it, was $65 a ton, and ours is midway between the two; but you can buy all the sulphate of ammonia you want, gentlemen, wholesale, at $50 a ton, and the average price of sulphate of ammonia for the year 1921 was several dollars less than $50 a ton. Now, if it costs you from 33⅓ per cent to 50 per cent more to make a material than you can buy it for at wholesale, and you are not going to raise the price of sulphate of ammonia by operating Muscle Shoals—you are likely to have the opposite effect upon the sulphate market by dumping all the product of that plant on the market—it is quite obvious you can not make that at a profit.

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And then comes the suggestion presented here at some length the other day by Mr. Swann for a third fertilizer material, phosphoric acid, and he said to build a hood over those carbide furnaces and provide certain additional apparatus, and we will smelt phosphate rock in that furnace with certain other materials, and we will get out of it a phosphoric acid. And, by the way, it does not help you a bit toward your war preparedness for nitrogen, because there is not any nitrogen in it, but, nevertheless, phosphoric acid is a very important fertilizer material, but the trouble with Mr. Swann's suggestion at Muscle Shoals is exactly the same as the trouble that Mr. Swann has found with his suggestion as he has been working it out at Anniston, Ala. To be sure, he can make a phosphoric acid by that method. He can make it at a price at which he has been able to sell it to the food industries that pay from 5 to 9 times the price per unit of P205 that the fertilizer industry can pay, provided he can bring out of that furnace as his main product, and the thing that absorbs the greater part of his phosphoric acid, not the phosphoric acid at all but a ferrophosphorus, and that is the thing, as he testified, he had been making his bread and butter on. Now, gentlemen, at Anniston, at the first of the year, according to the information we had from Mr. Swann, he had one 2,000-kilowatt furnace in operation. He had a 20,000-kilowatt plant and he had one-tenth of it in operation, and he was planning the operation of another furnace, and he was making ferrophosphorus as his principal product and he was getting a certain amount of phosphoric acid and in that way the operation was all right, up to that extent, and perhaps, he could put another 2,000-kilowatt furnace to work, but 4,000 kilowatts on that kind of operation will make all the ferrophosphorus that the American industry, even in normal times or the steel industry will use, and it is the steel industry it goes into, and as a by-product of the manufacture of that amount of ferrophosphorus, filling the full requirements of the normal American market, you would get the equivalent of 30,000 tons of 16 per cent acid phosphate, the fertilizer material.

Now, the normal consumption of acid phosphate in fertilizer is 4,000,000 tons. So that is the extent to which that kind of an operation can affect the fertilizer market. And so I might go on with not only fertilizer materials but every conceivable kind of material that you could make down there at Muscle Shoals, and, believe me, we have done this thing, because it is not a comfortable thing to us to have that plant, four times the size of our plant at Niagara Falls, in idleness and a continual threat. As soon as we can find a way we can suggest to the United States Government that that plant can be commercially operated, we will come down and beg the United States Government to take such steps as will make it possible to put it into operation. We want to get it disposed of in some way, so it is no longer a menace, but there is not a single thing we have been able to find that will make a commercial operation there.

Mr. MORIN. In your judgment, can Mr. Ford manufacture fertilizer or fertilizer compounds in that plant at a profit?

Mr. HAMMITT. No, sir.

Mr. MORIN. Suppose he should install a new process, other than the plant that is there now, could he do it?

Mr. HAMMITT. Not and use that plant.

Mr. MORIN. I mean if he installed a new plant.

Mr. HAMMITT. That is really too broad a field for me to give an offhand statement on. It is possible. I have no doubt that if Mr. Ford could get water power at the price that he would get it under this proposal, because of having assistance out of the National Treasury, he might be able to build plants down there that would make something or other at a very substantial profit, but he can not use that plant to make fertilizer materials at a profit, even under those conditions.

Mr. MORIN. It has been stated here that he could not unless he should install a new process, but that if he should install a new process, in order to allow him to make fertilizer or fertilizer compounds, the value of the plant there would be destroyed to the Government in case of war.

Mr. HAMMITT. He could not maintain that plant in a condition ready at any time to serve the purposes of the Government in war and use any other process that we know of for manufacturing his fertilizer material.

Mr. JAMES. In answer to a question from Mr. Morin, did I understand you to say that Congress has no right to authorize the Secretary of War to enter into this contract with Mr. Ford?

Mr. HAMMITT. I do not remember the particular question and answer, but the fact is, according to our advice, it would be necessary for the Government first to offer the proposition to the Air Nitrates Corporation on the same terms, and then, if we indicated we would accept it on those terms, it could not be offered to Mr. Ford. If we indicated we would not take it on those terms it could be offered to Mr. Ford on those terms.

Mr. JAMES. What you intended to say, then, was that you could not make any proposition to the Government until such time as the law was changed so that you could deal direct with some agent of the Government.

Mr. HAMMITT. And separating the nitrate plant from the water power, as it should be separated, of course, neither we nor anybody else would be in a position to make an offer to the United States on terms that the United States could afford to accept, to take over the nitrate plant and put it into operation.

Mr. JAMES. What are the total assets of the American Cyanamid Co.?

Mr. HAMMITT. Approximately $15,000,000.

Mr. JAMES. What are the total liabilities?

Mr. HAMMITT. Well, assets and liabilities balance up, as you know, on a balance sheet. I have here the statement of the American Cyanamid Co., that I would be glad to hand to you, Congressman, if you would like to see it.

The CHAIRMAN. Would you object to putting it in the record?

Mr. HAMMITT. No, sir.

The CHAIRMAN. If it is rather short, could you not read it for the benefit of the committee?

Mr. HAMMITT. It is the usual annual statement of a company, and there is the usual preliminary matter consisting of an announcement to the stockholders, and then there are two tables of figures that give all the information that the committee could possibly want or could get from any ordinary financial statement, and I should think that if what you want is to know the condition of the American Cyanamid Co., you can get that best by putting in these two pages of figures. I would be very glad to read them, but that sort of thing does not permit——

The CHAIRMAN (interposing). Perhaps the members of the committee would like to hear it read. Mr. James, who is now questioning you, states he would like to hear that read to the committee.

Mr. HAMMITT. This is a statement for the year ended June 30, 1921. Do I understand you wish me to read it?

The CHAIRMAN. Yes.

Mr. HAMMITT. It shows current assets consisting of the following: Cash, $380,339.85; notes receivable, $1,600; accounts receivable, $134,735.30; United States Liberty loan bonds at cost, that is, they are carried at cost, although the par is higher, $50,376.15; inventories of merchandise, materials, and supplies, $1,850,437.75, making a total of those current assets of $2,417,489.05. Then there is due from subsidiary companies amounts totaling $433,033.43. There are investments in subsidiary companies in amounts totaling $4,846,714.20. The most important of those investments is in the Amalgamated Phosphate Co., engaged in phosphate mining in Florida, in the pebble phosphate district. That amounts to $4,845,713.20, and the remainder is a nominal investment in a fumigating corporation and the $1,000 of stock of the Air Nitrates Corporation. The fixed assets of the company amount in total to $9,063,033.37, of which plant, properties, and equipment carried at cost, less reserves for depreciation, is $4,241,830.67, and licenses, patents, and good will, less the proportion that has been written off upon them for depreciation, is $4,821,202.70. With a small item of prepaid insurance added, that amounts to total assets of $16,811,645.43. So that I was slightly underestimating when I stated, in answer to your question, in round numbers the assets of the company.

As against that, there are current liabilities of $499,729.99. Those consist of the usual form of current liabilities, accounts payable, accrued wages and taxes, dividends payable, and reserve for income and excess-profits taxes. In addition to that, there are notes payable to subsidiary companies amounting to $830,225, the largest part of which is, again, notes payable to the Amalgamated Phosphate Co., engaged in phosphate mining. The capital stock of the company constitutes liabilities of $12,190,200. That consists of a little more than $5,500,000 of preferred stock and a little more than $6,500,000 of common stock. As I stated this morning, that preferred stock is a 6 per cent cumulative preferred stock, and it has paid all its dividends except the last two quarterly dividends. The common stock has never paid any dividends. The surplus

account is $3,291,489.62. Now, that, as always in such statements, of course, shows an exact balance between the liabilities and the assets.

Mr. JAMES. The capital stock of the American Cyanamid Co. is about $12,200,000, and of the Air Nitrates Corporation about $1,000.

Mr. HAMMITT. Approximately $12,200,000 for the American Cyanamid Co.

Mr. JAMES. If the United States believed that the Air Nitrates Co. had violated its contract, they would have to sue the Air Nitrates Co., would they not?

Mr. HAMMITT. If the remedy were by suit, that would be the company they would enforce that remedy against.

Mr. JAMES. They could not sue the American Cyanamid Co.?

Mr. HAMMITT. They could not; no, sir. As a matter of fact, Congressman, if it were a possible thing, which it is not, for a company with that limit upon its assets, responsibly to undertake work amounting to $100,000,000 and make itself liable for that work, it certainly would require a degree of compensation to the financial interests that would have to carry that risk very much beyond anything that this thing cost, and there was not a single thing that Air Nitrates Corporation did in the expenditure of money, you understand, that did not require the approval of the officers of the United States Government, and Air Nitrates Corporation was the agent of the Government. It operated by direction of the Government as to every detail. We were giving knowledge and experience in design and construction, but when it came up to the question of buying equipment, the order for that equipment had to be approved by the United States.

Mr. JAMES. Yes; but you were not agent for the United States when you tied us up to this contract so we can not sell to anybody except yourself.

Mr. HAMMITT. The contract itself provides that we are the agent of the United States Government for the purpose of doing a certain thing that the corporation was created to do, and it was provided that that was the only thing that the corporation should be engaged in; but this particular provision of the contract is in there for the purpose of protecting the American Cyanamid Co., the real party in interest, against having used to destroy it after the war the thing that it provided for the Government during the war.

Mr. JAMES. Any judgment that the United States might secure would be against the Air Nitrates Corporation?

Mr. HAMMITT. Yes.

Mr. JAMES. No judgment would be against the American Cyanamid Co.?

Mr. HAMMITT. No.

Mr. JAMES. That means that the United States in case it got judgment would get judgment against a company with $1,000 capital stock?

Mr. HAMMITT. Every one of whose acts had been directed by the officers of the United States Government itself, and irrespective of the capitalization of that company, if the company had made any money——

Mr. JAMES (interposing). Just answer my question.

Mr. HAMMITT. Then, of course, the Government would have its remedy against whatever were the assets of that corporation, but the Government has never had any occasion to sue us because we performed our contract 100 per cent.

Mr. JAMES. If it got judgment, though, it could only levy against the assets of the Air Nitrates Co.

Mr. HAMMITT. I think that is quite clear.

Mr. JAMES. It could not levy against the assets of the American Cyanamid Co. with a capital stock of $12,200,000, and assets of approximately $16,000,000.

Mr. HAMMITT. I think that is quite true; yes, sir.

Mr. JAMES. I understood you to say you were not an attorney.

Mr. HAMMITT. No, sir.

Mr. JAMES. Then your opinion about the construction of any contract or law or anything else of that sort, being a layman, would be guided by the advice of Mr. Hughes and your attorneys, and not the Judge Advocate General's office.

Mr. HAMMITT. Not of Mr. Hughes at the present time, of course, because Mr. Hughes is not our attorney, but certainly I would be guided by the advice of the attorneys of the American Cyanamid Co.

Mr. JAMES. In fact, you would not be faithful to your trust if you did not take their word in preference to the Judge Advocate General's office.

Mr. HAMMITT. I think that is true.

Mr. JAMES. And being a layman like yourself, it is my duty to take the opinion of the Judge Advocate General's office on the construction of any contract against

the opinion of your attorneys. Now, I want to call your attention to a question asked by Congressman Greene of the Acting Judge Advocate General:

"If this proposition on the part of Mr. Ford is accepted as it is written in the copy before us, do you understand that thereby the United States Government is freed entirely from any resulting obligations to any corporation or firm or persons incidental to the Muscle Shoals project in any way after Mr. Ford has taken possession under the terms of the accepted proposition?

"Col. HULL. So far as I have been advised, that is correct."

Any profits made by the Air Nitrates Co., are they still in the treasury of the Air Nitrates Co. or were they paid over to the American Cyanamid Co.?

Mr. HAMMITT. The situation was the other way, the American Cyanamid Co. has had to advance money to Air Nitrates Corporation, I believe, in order to meet the very small amount of obligations that the Air Nitrates Corporation has. The situation would be that if Air Nitrates Corporation made any profits they would certainly be turned over to the American Cyanamid Co.

Mr. JAMES. The Air Nitrates Co., I understand, has paid approximately $1,200,000 in taxes.

Mr. HAMMITT. No, sir; they have not paid that much because they have not received their entire fee; but they have paid substantially the full amount of the tax bills so far as the thing has been assessed up to date.

Mr. JAMES. Who are the bankers of the American Cyanamid Co.?

Mr. HAMMITT. We have an account in the Guaranty Trust Co., the Bankers Trust Co., and one other in New York, which for some reason or other——

Mr. JAMES. I do not mean the particular banks where you do business, but you said that if you made a proposition you would have to consult your bankers, and I wondered what you meant by those words, "your bankers."

Mr. HAMMITT. Well, Congressman, I think we will have a very much better opportunity to do business with them if we do not notify them in advance that they are elected, and that is a question which I think on reflection you will excuse me from answering.

Mr. JAMES. Who are the leading stockholders of the American Cyanamid Co.?

Mr. HAMMITT. There are two stockholders who might be considered leading stockholders because they own a substantial part of the stock. One of them is Mr. James B. Duke and one is the Virginia-Carolina Chemical Co. Mr. Duke owns between 23 and 24 per cent of the stock and the Virginia-Carolina Chemical Co. owns approximately 26 per cent of the stock. To the best of my knowledge, and I think this is probably thoroughly accurate, there is no other individual or group or interest that possesses as much as 10 per cent of the stock, and probably none that possesses more than 5 per cent. In other words, they are the only two very large stockholders.

Mr. JAMES. About how much is Mr. Duke worth?

Mr. HAMMITT. I have not the slightest idea.

Mr. MILLER. Mr. Hammitt, the American Cyanamid Co. has been organized how long—how many years?

Mr. HAMMITT. About 15 years.

Mr. MILLER. Its capital stock, I understand you to say, is about $12,220,000?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. Were you connected with the American Cyanamid Co. prior to the organization of the Air Nitrate Co.?

Mr. HAMMITT. No, sir.

Mr. MILLER. Ten gentlemen, I believe, organized the Air Nitrates Co.

Mr. HAMMITT. No, sir.

Mr. MILLER. How many?

Mr. HAMMITT. It was organized by the American Cyanamid Co.

Mr. MILLER. Yes; and the American Cyanamid Co. paid the capital stock of $1,000.

Mr. HAMMITT. Those 10 men you refer to, Congressman, had no interest through stock ownership or interest in profits or in any other way in the Air Nitrates Corporation, and were not entitled to receive a penny of compensation from Air Nitrates Corporation. They were simply 10 men who were loaned by the American Cyanamid Co. to the Government under the provisions of the series of contracts that provided for that.

Mr. MILLER. And these 10 gentlemen you speak of were executive officers, etc., in the Air Nitrates Co.?

Mr. HAMMITT. Yes; and in the American Cyanamid Co.

Mr. MILLER. So far as their association with the Air Nitrates Co. is concerned, the United States paid them entirely for their services, did they not?

Mr. HAMMITT. No, sir; they did not pay them a cent of any character whatever. What I mean is that the services of these men were given under the contracts. They received compensation but they received it all out of the private funds of the American Cyanamid Co. and not any of it from the Government.

Mr. MILLER. Then your schedule A on page 21 of the contract is of no force and effect.

Mr. HAMMITT. It is modified by the provision as to what Air Nitrates Corporation is to furnish without charge, and one of the things it is to furnish without charge is the services of these individuals.

Mr. MILLER. I call your attention to subdivision E of the schedule, on page 21, which reads as follows:

"Salaries of managers, engineers, superintendents, timekeepers, accountants, clerks, foremen, and other employees at the main and field offices of the agent in connection with said work, salaries of the executive officers of the agent except such as shall be placed at the disposal of the agent by the American Cyanamid Co. and set forth in said contract marked 'Exhibit 1.'"

How many of those gentlemen did the cyanamid company contribute?

Mr. HAMMITT. These 10 men to whom you referred, and they were not paid anything by Air Nitrate Corporation or by the Government, and the provision under which their services were delivered is covered by article 10 of the contract which you will find on page 11.

Mr. MILLER. Now, let us lay the cards right down on the table and see what we have here. We have the American Cyanamid Co. which you say was organized approximately 15 years ago. It has approximately $12,200,000 of capital. Now, the war comes on and it is necessary for the United States Government to have a large output of ammonium nitrate. Your folks have been in the manufacture of that article for some years and you have a $12,000,000 plant.

Mr. HAMMITT. Yes; of manufacturing nitrogenous materials.

Mr. MILLER. The United States Government negotiates with you and your cyanamid company immediately organizes a subsidiary company, known as the Air Nitrate Co., which is organized with a capital stock of $1,000, and which is entirely paid for out of the assets of the American Cyanamid Co., and the executive officers, etc., in this Air Nitrate Co. were therefore connected with the American Cyanamid Co.; is that right?

Mr. HAMMITT. That is right as to these 10 men.

Mr. MILLER. Yes; and all other men, aside from these 10 men that were furnished by the American Cyanamid Co., were paid by the United States of America, according to subdivision E of schedule A.

Mr. HAMMITT. Yes, sir.

Mr. MILLER. Now, in that condition the Air Nitrates Co. enters into a contract with the United States Government as the agent of the United States Government. That is the situation, is it not?

Mr. HAMMITT. That is the situation, and you have stated it correctly up to the point——

Mr. MILLER (interposing). Then we have the anomalous situation of the United States Government, as a principal, entering into a contract with the Air Nitrates Corporation, as its agent; or, in other words, a principal entering into a contract with its agent. Now, I notice on page 4 of the contract with the Air Nitrates Co. this language:

"Whereas the said company is unwilling to subject its property and assets to liability in connection with he planning, consruction, and operation of the proposed plants and has accordingly organized the Air Nitrates Corporation (the agent under this agreement) which shall act as the agent of and which shall be solely responsible to the United States and others in the planning, construction, and operation of the proposed plants, and according to the terms hereof."

Now, the Air Nitrates Co., which you say is owned by the American Cyanamid Co., got a construction fee on this work, did it not?

Mr. HAMMITT. A fee for design and construction.

Mr. MILLER. Yes; for designing and construction. That is shown on page 12 of the contract. You got a fee for construction of 3½ per cent of the cost up to $30,000,000, and then you get a fee of 1½ per cent of all sums above $30,000,000 that was put into this proposition. There was approximately $67,000,000 put into the plant, was there not?

Mr. HAMMITT. Approximately.

Mr. MILLER. Then, according to a rough arithmetical computation, your construction fee would amount to about $1,604,200.

Mr. HAMMITT. If there were not a provision fixing a maximum beyond which we should not be compensated.

Mr. MILLER. Where is that provision? It says here 1½ per cent of such cost in excess of said $30,000,000. "The total of the construction fee shall not exceed $1,500,000." That is what you mean?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. Now, this $1,000 corporation, in the interest of your $12,000,000 corporation, gets a construction fee of $1,500,000 for the construction of that plant. Then on top of that you get an operation fee, do you not?

Mr. HAMMITT. Yes; which amounted to——

Mr. MILLER. You get an operation fee of 2½ mills per pound.

Mr. HAMMITT. Yes; and I want to say that in my statement that the company has sustained a loss rather than a profit, I included the operation fee, which amounts to about $7,000, and also the royalty, amounting to about $8,000, making a total of about $15,000. That all goes into the pot and yet we came out with less money than we started with.

Mr. MILLER. Let us see what you get and where we are coming out when this contract is fulfilled. We have got $1,500,000 as a construction fee, and we will put that down, and then let us see about your operation fee:

"One-fourth of 1 per cent per pound of ammonium nitrate produced in compliance with article 7 hereof, and accepted or utilized by the United States, up to and including 110,000 tons produced in any fiscal year of the United States, and one-eighth of 1 cent per pound of ammonium nitrate so produced and accepted, or utilized in any said fiscal year in excess of such 110,000 tons. Payment shall be made monthly."

Now, you have computed, if this plant runs at full capacity, what your operation fee will be, have you not?

Mr. HAMMITT. You mean if we had operated it?

Mr. MILLER. Yes; that is what they built this plant for—to operate.

Mr. HAMMITT. I have not that computation in front of me.

Mr. MILLER. 110,000 tons of ammonium nitrate figuring on a basis of 2,000 pounds to the ton makes about 220,000,000 pounds of ammonium nitrate per annum which would be the capacity of that plant. That runs into money pretty fast.

Mr. HAMMITT. Is that a question? I am not sure I got it.

Mr. MILLER. That is the construction fund and the operation fund. Now you have another thing, and that is this royalty. Your royalties are covered by a contract between the United States and the American Cyanamid Co.?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. Which contract was entered into simultaneously with the contract between the United States and the Air Nitrates Corporation?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. In other words, we have the agent of the Government in the construction of this plant, the child of the parent corporation, and your parent corporation, also, all of you entering into a contract with the United States Government.

Mr. HAMMITT. That is quite correct.

Mr. MILLER. I am referring now to page 27 of the contract, in regard to royalties, Article VI, which says:

"In consideration of the granting of the license provided for in Article I hereof and of the other conditions to be performed by the licensor, the licensee agrees to pay the licensor during the term thereof specified in said article, as royalty, an amount equivalent to 6 mills per pound on all nitrogen fixed as lime nitrogen manufactured at the plants hereinbefore described in the contract of even date between the United States and the Air Nitrates Corporation, and to which reference has hereinbefore been made, up to and including the first 91,700,000 pounds of such nitrogen so fixed in any fiscal year of the United States, and in addition thereto 3 mills per pound on all nitrogen fixed as lime nitrogen, in any said fiscal year in excess of the said 91,700,000 pounds of nitrogen."

The output of plant No. 2 being 110,000 tons of ammonium nitrate, figuring 2,000 pounds to a ton, the amount would be about 220,000,000 pounds a year, would it not?

Mr. HAMMITT. Your figures are all right, except for this fact: You are not dealing, in fixing these fees for royalties, for example, upon the tonnage of ammonium nitrate. You are dealing with the tonnage of nitrogen.

Mr. MILLER. What is the difference between the tonnage of nitrogen and ammonium nitrate at a factory at which you are only producing ammonium nitrate?

Mr. HAMMITT. Because the amount of nitrogen in the 110,000 tons of ammonium nitrate, would only be about 42,000 tons. With that exception you are dealing with a correct computation of what would have been our profit if we had operated the plant under this contract.

Mr. MILLER. Forty-two thousand tons of nitrate is all that this plant can produce?

Mr. HAMMITT. Of nitrogen.

Mr. MILLER. You mean of nitrogen?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. Why did you compute the royalties on nitrogen instead of royalties upon ammonium nitrate?

Mr. HAMMITT. Because the nitrogen is the valuable thing which has been produced, and the rest of it is merely the carrier of that nitrogen. For the same reason, for example, that we sell our product in commerce to the fertilizer industry on the same basis except that we use a unit of ammonia instead of a unit of nitrogen.

Mr. MILLER. How much royalty did you figure the American Cyanamid Co. would get out of this plant when it was running at its full capacity; that is, how much royalty would you get out of the United States Government?

Mr. HAMMITT. That is so far from anything that ever was an actual fact that I can only make a rough, quick estimate. I should say it would be about a million dollars.

Mr. MILLER. About a million dollars a year?

Mr. HAMMITT. About a million dollars a year, at the capacity of that plant.

Mr. MILLER. Then if the United States Government is running this plant at its full capacity you would be getting 10 per cent on your capital stock out of this one institution, would you not?

Mr. HAMMITT. It does not come to quite 10 per cent; it would be approximately 8¼ per cent.

Mr. MILLER. A million dollars a year on a capital stock of $12,220,000?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. It would be between 8 and 9 per cent.

Mr. HAMMITT. Yes, sir.

Mr. MILLER. On top of that, your American Cyanamid Co. is the beneficiary of this construction fund and the beneficiary of the operating fund?

Mr. HAMMITT. You mean the construction fee and the operating fee?

Mr. MILLER. Yes.

Mr. HAMMITT. Yes; and, of course, the United States, if we had made that kind of war profits, would apply the same system of taxation.

Mr. MILLER. I am not talking about taxation; I am not saying a thing about taxation. I am talking about the relation between the United States Government and the American Cyanamid Co.

Mr. HAMMITT. The only reason I mentioned it——

Mr. MILLER (interposing.) You are getting a million dollars out of the royalties?

Mr. HAMMITT. Not "are getting," but would have gotten in case the plant were operated to its capacity for a year.

Mr. MILLER. I am basing this on the hypothesis that the plant will be operated to its full capacity of 110,000 tons of ammonium nitrate a year. Your royalties will amount to a million dollars a year, you say?

Mr. HAMMITT. Yes; that is the right figure; I guess it is somewhere near right.

Mr. MILLER. Then the operating fund or the construction fund will amount to how much all told?

Mr. HAMMITT. The construction fee would amount to a million and a half.

Mr. MILLER. Adding that to the other makes two millions and a half. Now, you are entitled to your operating fee, which according to the basis figured on here, with the plant running at capacity, would be in the vicinity of $560,000 a year?

Mr. HAMMITT. I am assuming your figures are right, Congressman.

Mr. MILLER. I think they are. Now, the American Cyanamid Co. has gotten between 8 and 9 per cent on its capital stock out of your royalties every year, provided the plant runs to capacity?

Mr. HAMMITT. You mean we would have gotten, if that hypothesis were correct.

Mr. MILLER. I did not mean out of the royalties, but out of the construction fee, which is $1,500,000.

Mr. HAMMITT. We have not yet received it, but we believe we ultimately will receive it.

Mr. MILLER. I am figuring out where the Government gets off under the terms of this contract. The Government was to pay $1,500,000 as a construction fee. That is what we obligated ourselves to pay; that is the maximum sum?

Mr. HAMMITT. That is the maximum construction fee under the contract.

Mr. MILLER. Now, we pay you, if the plant runs to its capacity, $1,000,000 in royalties annually as long as the plant runs. We are to pay you an operating fee as long as the plant runs at the rate of $560,000 a year. Now, if these contract provisions are carried out we will pay you $1,500,000 for the construction fee, which is approximately 9 per cent on your capital stock; then we pay you between 8 and 9 per cent on your stock for royalties every year, so in about 10 years that would absorb your entire capital stock. And we pay you $560,000 more per year to operate this plant. It looks like a pretty good contract from the American Cyanamid Co.'s angle of it, does it not?

Mr. HAMMITT. But you are considering and describing a situation which is a hypothesis that, of course, never happened.

Mr. MILLER. You figured, did you not, that this plant would run to its capacity, Mr. Hammitt? Did not the American Cyanamid Co. figure it would run to its capacity?

Mr. HAMMITT. I assume——

Mr. MILLER (interposing). And provided for it in its contract?

Mr. HAMMITT. But assuming the American Cyanamid Co. figured that the operation would be built up to capacity, and would be continued to capacity until the war was ended. Of course, the fact is that the war ended, substantially, with the armistice in November, 1918, and what you are describing is not what the American Cyanamid Co. has received or will receive under this contract. But once you put that in the record, Congressman, if it is made perfectly clear that that would have been true if we had received these things, and that they are based upon a hypothesis of circumstances that did not actually happen, then I am perfectly willing you should make your own analysis and put that in the record.

Mr. MILLER. I thoroughly realize, Mr. Hammitt, that the plant did not come up to full capacity.

Mr. HAMMITT. I know that.

Mr. MILLER. I am undertaking to analyze what the Air Nitrates Corporation was prepared to do with the United States Government and what the American Cyanamid Co. was prepared to do with the United States Government under the terms of the contracts with the United States Government, entered into with each of the corporations, which based the proposition upon the capacity of the plant.

Mr. HAMMITT. Yes.

Mr. MILLER. And the calculations I made are that you will get, or the American Cyanamid Co. will get, annually as long as that plant runs to capacity, between 8 and 9 per cent on the entire capital stock of the American Cyanamid Co.; am I right about that?

Mr. HAMMITT. I certainly believe that those figures you have used are either exactly accurate or somewhere near accurate; I do not want to quarrel with you about those figures.

Mr. MILLER. Take it as between 8 and 9 per cent a year, if the plant runs to capacity. In 11 years, or a little over 11 years, that amount will have paid in the entire capital stock of the American Cyanamid Co. in royalties, would it not?

Mr. HAMMITT. It would not run for that period of time because it is not conceivable it can run for that period of time on that basis, because the most important of the patents would expire. But except for that statement, your statement is quite correct, assuming that what you are talking about all the time is gross return, and you are not deducting from that gross return, as the taxpayer of course has to deduct from his gross return before he can amortize any of his capitalization, and deduct that in the payment of taxes.

Mr. MILLER. I do not want any reference again, Mr. Hammitt, to taxes. We all have taxes to pay. You quibble when you have to pay back to the Government of the United States the character of taxes you have to pay, and

that is altogether a different thing. The word taxes is not mentioned in the contract. You can not find it in the contract. What I am trying to get at is this, in connection with this organization: In the relations between the United States Government and the Air Nitrates Corporation on the one hand and the United States Government and the American Cyanamid Co. on the other hand, I want to find out whether or not, if the contract was carried out, in 11 years, from the income of the royalties alone, the United States Government would have paid back the entire capital stock of the American Cyanamid Co. at the rate of $1,000,000 a year, which you figured out to be the amount. What taxes you have to pay is another matter. On top of that you get $560,000 a year for an operating fee, which is over half the amount you get on royalties, and you figure royalties at approximately 9 per cent, so that your operating fee is at least 4½ per cent.

So there is another fund that would pay up the entire capital stock of the American Cyanamid Co. in less than eight years, if the plant is running at full capacity; that is, those two funds flowing in to the American Cyanamid Co. would entirely absorb the capital stock of that company in less than eight years.

Mr. HAMMITT. Provided it stayed in the American Cyanamid Co. they would.

Mr. MILLER. I mean under this contract you have entered into with the United States Government.

Mr. HAMMITT. Assuming that the contract operated in that way, and that we were to assume or could assume the same attitude of lack of interest in taxes that you assume when you refuse to permit them to be mentioned. When we come before certain committees of Congress we are told that taxes are a very important thing. Then when we come before another committee of Congress, I know you do not intend to have the record show that because these taxes are not mentioned in the contract they do not have to be paid, but if you pay 80 per cent back in taxes to the United States Government and 5 per cent back in taxes to the State of New York, then you have a very different net result than if you leave those things out. And the only objection I have to leaving those things in is not to interfere with a perfectly sound mathematical calculation, but to interfere with any impression that may be had from your remarks that money that is taken away from us stays with us, because it does not, and this money, of course, we never received.

Mr. MILLER. I will ask you again that you cease reference to the tax proposition. I am not getting at that at all at this time.

Mr. HAMMITT. I think that is a very unfair request, but I will comply with it.

Mr. MILLER. What I am getting at is the relation between the United States Government and these two corporations. Now, we have from your income from the operating fee a fund which the American Cyanamid Co. gets the benefit of, and an income from the royalties, of which the American Cyanamid Co. gets the benefit, and which would pay up the entire capital stock, less your taxes, in a little over eight years.

Mr. HAMMITT. That would seem to be——

Mr. MILLER (interposing). On top of that we have, the first crack out of the box, $1,500,000 for a construction fee which the American Cyanamid Co. gets the benefit of. Then, according to my hasty calculation, the United States Government, in this contract, obligates itself to pay the American Cyanamid Co. a construction fee, an operating fee, and royalties which all come out of the United States Treasury and go to the American Cyanamid Co., and would pay every dollar of the capital stock of that company in a little over five years—that is, the whole capital stock amounting to $12,220,000.

Mr. HAMMITT. As long as you could apply it to that purpose, it would.

Mr. MILLER. Out of that you have taxes and overhead to pay?

Mr. HAMMITT. Yes; you bet we have.

Mr. MILLER. But the United States entered into that contract upon the basis of which you were to receive in a little over five years an amount equal to the entire capital stock of the American Cyanamid Co. paid back to you out of the United States Treasury; that is approximately right, is it not?

Mr. HAMMITT. Assuming that the war should continue for that period of time, and assuming that the operations should continue for that period of time, and subject to an opportunity which I should like to have to correct these figures on the record, if, upon a computation, I find that they are not correct.

Mr. MILLER. It is not necessary for the war to continue. The only thing necessary to continue is the plant, at its capacity production, and then you would get the benefit of all these things.

Mr. HAMMITT. Provided the operation to capacity production were operated by the Air Nitrates Corporation; otherwise we would not get the benefit of these things.

Mr. MILLER. What I was getting at was where the United States Government gets off out of these contracts and where the corporation dealing with the United States Government comes out at the end of the road. We have a nitrate plant down there which the Air Nitrates Corporation constructed and which cost the Government in the neighborhood of $67,000,000. As a part of that enterprise, it was conceived by the United States Government that it would operate these by hydroelectric power.

Mr. HAMMITT. I do not get the last part of that.

Mr. MILLER. I say from the Government's proposition and the Government's end, the intention of the Government is to operate that nitrate plant No. 2 by hydroelectric power generated by the water-power plant.

Mr. HAMMITT. If that is the intention of the United States Government——

Mr. MILLER (interposing). There could be no other intention in the world, could there, Mr. Hammitt, when the United States Government is building a $67,000,000 plant on the banks of the river and then starting in to build a dam, putting $17,000,000 into the dam; there could be no other hypothesis than that it was the intention of the Government to run that plant by the hydroelectric power generated at that dam, could there?

Mr. HAMMITT. I am frank to say I can not give you the precise hypothesis on the basis of which that money was put into the dam, because the dam was not built to operate that plant at the time; nor was the water power essential that it should be operated during the war. The construction of that dam, while it was undertaken, was very quickly stopped during the war because it was obvious that it would take so long to complete the water-power project that you would not have the use of it during the war. So it seems the plant was not built for that purpose.

If you conceive of a commercial operation of the nitrate plant by the United States Government, then I can see that you must conceive of the delivery of very cheap hydroelectric power to that plant for that purpose. If you conceive of a plant being held in stand-by condition for use in war, I should recommend that you separate the hydroelectric-power project from it entirely and deal with it as an entirely separate matter.

Mr. MILLER. Your only reason in separating the water power from the nitrate plant is that cheap power there would enable the product of that plant to come in competition with your product at a less expense of production, is it not?

Mr. HAMMITT. No, sir; it is not.

Mr. MILLER. Let us hear why it is not.

Mr. HAMMITT. I want to make that perfectly clear. Our interest is not affected by any belief, for we have no belief, that even with power at the price Mr. Ford could get it under this contract he could operate the nitrate plant otherwise than at a loss. We have arrived at that belief as the result of very careful study of the subject, and we say that even with power at the price at which Mr. Ford would get it he could not operate the nitrate plant except at a loss. But Mr. Ford would receive under this contract vastly more power than could possibly be used in the operation of the nitrate plant, and he would receive that so cheap that he could afford to take a loss on such operation of the nitrate plant as he entered into under this contract and to pay that as a premium for the water power he got—and it is the water power he is primarily interested in, of course.

Mr. MILLER. You and I are perfectly in accord upon that proposition—that the water power is the inducing cause of Mr. Ford's making any proposition to the United States Government in connection with this project. But the only thing you are afraid of is that Mr. Ford would get the benefit of cheap power there and run his nitrate plant with that cheap power; and if he should run it at a loss, the loss could be recouped out of the profits from the surplus water power.

Mr. HAMMITT. Exactly so; yes, sir.

Mr. MILLER. Now we understand each other on that proposition. This plant makes ammonium nitrate. Does your factory at Niagara Falls make ammonium nitrate?

Mr. HAMMITT. No, sir.

Mr. MILLER. This plant makes ammonium nitrate. What does your plant make?

Mr. HAMMITT. We make at Niagara Falls for our main product, cyanamid; and if the Muscle Shoals plant were entirely devoted to the manufacture of ammonium nitrate, we would not have the slightest concern about any competition from that plant, because that is not the product we make or propose to make. On the other hand, after you got your ammonium nitrate you would have to dump it into the Tennessee River and float it to the Gulf of Mexico, because you would not have any use for it.

Mr. MILLER. I was very much pleased, Mr. Hammitt, with your patriotic angle of this thing, which you stated to the committee this morning, turning over your entire organization. But I see out of that patriotic impulse you had that there was a scheme of financing, or a principle of philosophy in financing it, by which, if the output of this Government factory should continue uninterrupted, it would pay up the entire amount of the capital stock of the American Cyanamid Co. in a little over five years.

Now, also, on top of that we have what I should call a very remarkable proposition here in connection with Article XIX in the contract between the United States Government and the Air Nitrates Corporation. This article is a very cleverly drawn article; and you say it was drawn by no less an attorney thn Mr. Charles E. Hughes?

Mr. HAMMITT. No, sir.

Mr. MILLER. Who drew it?

Mr. HAMMITT. I really can not tell you who drew it.

Mr. MILLER. Mr. Hughes was called in consultation on it, and it received his O. K.?

Mr. HAMMITT. As to whether this particular language received the approval of Justice Hughes, I can not state. I can state that this form of protection was provided on the strength of his advice.

Mr. MILLER. Article XIX reads as follows:

"*Sale of plants.*—If upon cessation of this war or for any other reason the United States determines to cease the construction, equipment, or operation of any of the said plants and to dispose of the same, the agent shall be given the first opportunity (for a reasonable period of time, not to exceed six months after receipt of written notice stating the determination of the United States to dispose of the same, and the material terms upon which such disposition will be made), to purchase the same upon as favorable terms as the United States is willing to accept therefor, before the United States shall sell the same to any other party."

Then that article 19 of the contract between the United States Government and the Air Nitrates Corporation was clearly made in the interest of the American Cyanamid Co.

Mr. HAMMITT. Undoubtedly; yes, sir.

Mr. MILLER. Then we have this anomalous condition, with the subsidiary corporation of the American Cyanamid Co., itself likewise at the same time an agent of the United States Government, negotiating a contract with its principal in the interest of the parent organization. That is what you have there, is it not?

Mr. HAMMITT. As a matter of fact——

Mr. MILLER (interposing). That is just exactly what the situation is, is it not?

Mr. HAMMITT. Yes; from the technical point of view, but the practical situation undoubtedly was that men who knew exactly what interests everybody represented, and who had a definite object to accomplish, and who were all of them agreed that this protection should be extended to the American Cyanamid Co., sat around the table and agreed upon the form of protection. Now, there was not any case of doubt as to the fact that every man in that conference who was an officer of the American Cyanamid Co. was there for the purpose, among other things, of protecting the interests of the American Cyanamid Co., and it was fully agreed by the representatives of the Government that there was an interest there which should be protected.

Mr. MILLER. And I think they were perfectly successful in protecting that interest.

Mr. HAMMITT. I think so; yes, sir.

Mr. MILLER. What you were getting rid of under the provisions of article 19 was a possible competitor after the war was over, was it not?

Mr. HAMMITT. Unless that competitor were prepared to pay a higher price for the plant than we were willing to pay.

Mr. MILLER. You had a right under your contract to buy this plant from the United States Government should it ever desire to sell it at a price equal to that of any other offer?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. And your purpose in putting that in there was to head off a possible competitor?

Mr. HAMMITT. Yes, sir.

Mr. MILLER. Then we will add to the other things, where the contract provided for a system of financing this proposition by which the American Cyanamid Co. would get its capital stock entirely paid for within five years or six years, this incidental proposition by which you would get rid of a competitor, or you would have a preferential right over any other competitor when the war was over.

Mr. HAMMITT. If there had not been any war and we had continued to hold and operate under our patents and processes, there never would have been any other competitor, and if there had not been a war and the plant had not been designed and constructed there never would have been a competitor. So we were not getting rid of a competitor, which, had there not been the interposition of a war, we never would have been compelled to face. That is the point.

Mr. MILLER. But, on the other hand, if there had not been a war there would have been no necessity for the United States Government entering into a contract with anybody. But you say this contract was predicated upon the war, or the necessity for making this contract was predicated upon the war. Let me take another angle of this proposition. You want the water power and the possible fertilizer angle divided?

Mr. HAMMITT. I think that is the best solution that can be offered for this problem.

Mr. MILLER. How would you be in any better situation, so far as Mr. Ford's offer is concerned, if the water-power proposition were considered alone and the cyanamid proposition were considered alone? If Mr. Ford's proposition should be accepted, including both of those angles of it, by the United States Government, he would then be the owner of both and he could sell himself power.

Mr. HAMMITT. We will take our chances on that, because once you separate the nitrate proposition from the water-power proposition Mr. Ford will not receive the water-power proposition on those terms.

Mr. MILLER. You mean it will be controlled by the price set by the public utilities commission, the price at which the power is sold in the State of Alabama?

Mr. HAMMITT. I mean the terms are so extremely favorable on the water power to Mr. Ford that somebody else surely will come in and offer something more, and if nobody else will, I think the American Cyanamid Co. will immediately become interested in the water power, because it looks as if that is the best kind of business to go into.

Mr. MILLER. Incidentally, whether you became interested in the water-power proposition or not, you would then be in a position to head off any possible competitor in the business getting hold of that cyanamid plant down there, would you not? That is an accurate statement, is it not?

Mr. HAMMITT. I do not see any way by which we could assist the situation affecting the nitrate plant by negotiations regarding water power. But I will say this, that if you separate the water power from the nitrate plant, with the experience we have had, with the knowledge that we have of the art, and with the processes that we control we will certainly be in at least as good a position, and very likely a better position than anybody else, to undertake the operation of the nitrate plant, and the very minute any operation of that nitrate plant becomes a commercially feasible proposition we will then come to the Government as a matter of business and ask for an opportunity to take it over on terms that will safeguard the Government's interests and provide for its operation.

Mr. MILLER. Here is the situation: In 1916, under the national defense act, there was a fund of $20,000,000 appropriated by Congress and put into the hands of the President, for the investigation, procurement, etc., of a nitrate plant. That is before we got into the war. We are told that the principal part of that appropriation went into this dam.

Mr. HAMMITT. I think you are correctly informed.

Mr. MILLER. And that the nitrate plants, both No. 1 and No. 2 were constructed out of fortification funds.

Mr. HAMMITT. It was my impression that approximately $3,000,000 out of the $20,000,000 appropriated had gone into nitrate plant No. 1, but perhaps I am mistaken about that.

Mr. MILLER. You see by that that none of the $20,000,000 appropriated for the construction of the nitrate plants under the national defense act of June 3, 1916, ever went into the nitrate plants in the war. It was diverted.

Mr. HAMMITT. As a matter of fact, Congressman, if it went into that dam it was practically all spent after the war was over.

Mr. MILLER. I do not know about that; it probably was.

Mr. HAMMITT. There is no doubt about that.

Mr. MILLER. Now, we get another appropriation from the outside to build the nitrate plant, which we intended to build out of the $20,000,000 fund.

Mr. HAMMITT. I am not sure that the latter statement is correct, because the $20,000,000 fund was appropriated for water-power development, as well as for development of nitrate plants.

Mr. MILLER. So far as I can see, the only authority Congress ever conferred upon anybody to construct the nitrate plants, and the only fund ever appropriated by Congress to construct a nitrate plant was the fund appropriated under the act of June 3, 1916.

Mr. HAMMITT. The Ordnance Department was of the opinion that there was another fund, and that it was out of another appropriation. I am not prepared to pass upon that.

Mr. MILLER. That was the only money put in there. Now, Mr. Hammitt, what is the obstacle in the way? Getting right down on opposite sides of the table—what is the obstacle in the way of the American Cyanamid Co. making a proposition to the United States Government? You are vice president of the Air Nitrate Corporation, and you have notice now that the United States Government is negotiating for the alienation of this piece of property and having that notice, why do you not submit a proposition to the Secretary of War, or to the Congress of the United States? Keeping in view always that it is a well-known principle of law that what you have knowledge of as a man you have knowledge of as an official, why do you not submit such a proposition?

Mr. HAMMITT. Given a situation in which we are unwilling to make representations to the Congress or the Government or the public which we do not believe to be true; given a situation in which we do not believe it to be true that that nitrate plant can be operated successfully on a commercial basis at the present time; given the fact that we do not yet believe that it is conceivable that the United States Government proposes to enter into business either directly by Government operation of the manufacturing plants or indirectly by extending a subsidy to a private individual to assist him in such operation, I do not think we are in a position to interest the bankers to whom we would go with this matter to prepare such a proposition.

And what would be the first thing they would say to us? They are hard-headed bankers let us assume. What is the first thing they will say to us? They will say any proposition you offer at this time would be merely a case of bidding against yourself. Congress itself can not negotiate. There are too many Congressmen. This talk of the United States being in negotiation at the present time does not interest a banker, because he knows that Congress is not organized to conduct negotiations, and until Congress has placed the thing in the hands of an administrative officer who can effectually negotiate, I tell you it is a pretty difficult thing to interest hard-headed financiers in the financing of any kind of a proposition. I do not think the Government ought to put itself in the position where it is as difficult as possible to have anybody to bring a proposition to the Government for its consideration, where there is nobody except a man in the peculiarly fortunate position Mr. Ford is in, who can bring a proposition to the Government, thus excluding all possible competition. At the present time, I am quite sure it would not be a practicable thing. I would not be prepared to recommend it to the board of directors of the American Cyanamid Co., that is, to endeavor to prepare and to submit a proposition.

Mr. MILLER. This thought occurs to me, Mr. Hammitt, that if Mr. Ford can negotiate directly through the channels which you seem to think objectionable, and he is negotiating directly with Congress, having put up a proposition that we may accept if we desire to; and that being true, I will ask you why you can not do the same thing? Why have you not the same opportunity to figure as Mr. Ford has?

Mr. HAMMITT. Because the problem is a problem of financing, and Mr. Ford is in a far better position than my company is.

Mr. MILLER. That is exactly what I thought your answer would be. In other words, Mr. Ford can make a more advantageous proposition than you can, and that is the reason you do not make a proposition.

Mr. HAMMITT. No.

Mr. MILLER. Was that not what you said?

Mr. HAMMITT. No. I believe Mr. Ford can make a proposition in this way, with the existing state of the law, when it is entirely possible we can not make any at all, and yet, if you will eliminate the inequalities between a corporation with from $12,000,000 to $16,000,000 of assets, and an individual with a bank account under his control of $150,000,000—if you will equalize that situation—by making it possible for us to negotiate on the basis on which the small fellow can do some financing, then maybe you will have some competition; if you provide that this thing shall be handled on a basis on which a small fellow can not do any financing then you will not get any competition or help from the small fellow. You will find him forced to rely upon the provisions of his contract with the United States.

Mr. MILLER. I had thought, frankly, that this was in the interest of the American Cyanamid Co., because if Mr. Ford takes it over, and provided that your contract is not ultra vires, then Mr. Ford will pay you a million dollars a year on royalties, which will amount to the entire amount of your capital stock in 12 years, and he will pay you, also, $560,000 a year for an operating fee, and from those two sources alone, what Mr. Ford will have to pay you, will eliminate your entire stock within a comparatively short time.

Mr. HAMMITT. No; this time your figures are wrong.

Mr. MILLER. Do you mean to tell me that you will not get approximately $1,000,000 a year in royalties?

Mr. HAMMITT. I am not speaking of royalties; I am speaking of operating fees. You will have to leave that out, because that, even under the terms of the contract, would not come to us.

Mr. MILLER. Then, leave that out, still you would have a million dollars a year which he would pay you in royalties, which would be sufficient to retire your entire capital stock within 12 years.

Mr. HAMMITT. Do you believe that Mr. Ford, under the provisions of this contract, would operate this nitrate plant to capacity, and have you had——

Mr. MILLER (interposing). He agrees to do it, to operate it to the capacity of 110,000 tons of ammonium nitrate.

Mr. HAMMITT. I do not read the contract in that way.

Mr. MILLER. Have you the Ford contract before you?

Mr. HAMMITT. No, sir.

Mr. MILLER. Have you looked at it very carefully?

Mr. HAMMITT. I have read it carefully; yes, sir.

Mr. MILLER. Section 14 provides:

"The company agrees to operate Nitrate Plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control."

Now, suppose Mr. Ford's proposition is accepted. Then, for 100 years, the American Cyanamid Co. has an income of $1,000,000, or as long as your patents exist.

Mr. HAMMITT. Congressman, do not put that in the record in that way, because it is not the fact; it is not a correct interpretation of that provision of the contract. I honestly do not believe, if you will let me help you with that interpretation, that you will believe that is the proper interpretation of the contract. You have had representatives of Mr. Ford here before you, and they have told you Mr. Ford will not make fertilizer materials at Muscle Shoals, unless he can make them at a profit. Mr. Ford stated the same thing to the Secretary of War, and the Secretary of War testified before you to that effect. And I believe, actually, that if operations were continued at Muscle Shoals, producing sulphate of ammonia, at a cost of $70 a ton to produce that which was continuously sold at $50 a ton, it would probably result in a proceeding before the Federal Trade Commission to order that stopped as unfair competition.

Mr. MILLER. We will not speculate on those things.

Mr. HAMMITT. Then you have in there your provision for strikes and accidents, and you are proceeding on the theory that you are going to get something

for the 100 years, but no man would continue that kind of an operation at a regular annual loss.

In addition to that do you know that there is a common understanding in business that Mr. Ford does not pay royalties until those who claim the royalties have dragged their weary way along with his attorneys supported by his bank account up to the highest courts, and if you want any information on that subject I suggest that you consult the records of litigation relating to matters of that kind.

Mr. MILLER. I glean from your answer that you are afraid that your royalties would not stick on this contract.

Mr. HAMMITT. No; we believe that if we have the same experience that others have had with perfectly valid claims that we may have to go through expensive litigation before we collect. You have spoken of a period of 100 years, and the principal patents we have expire in 1932, and if he waited for water power to operate that plant it would be several years before he could get started there, and there would only be six years instead of a hundred years during which the royalties could be paid, and that is assuming a capacity operation, which, frankly, I do not believe would result from this contract, and I really doubt if you believe it.

Mr. MILLER. Are you stating the matter correctly? Have you undertaken to bind the United States in this contract to pay for royalties on your patents that will expire in 1932?

Mr. HAMMITT. Not after the patents expire.

Mr. MILLER. Where is there anything in your contract that says after the patents expire the royalties will cease? As I read the contract you have permanently bound the United States to pay you a million dollars a year royalties as long as this contract is in existence, and you tell me now that the patents will expire in 1932.

Mr. HAMMITT. I have been advised by the attorneys of the American Cyanamid Co., and it has always been our understanding, and has been our testimony before various congressional committees, that no royalties would continue after the expiration of those patents.

Mr. MILLER. According to that statement your principal patents will expire in 10 years. If the contract should remain in force for 12 years, then the income from the royalties alone would retire your entire capital stock, and added to that your operating fee, together with the income from the royalties, would retire your entire capital stock in a far less period than 10 years.

Mr. HAMMITT. Of course there is no operating fee except in case of operation by the Air Nitrate Corporation as an agent of the Government.

Mr. MILLER. This contract is in perpetuity.

Mr. HAMMITT. If the Government sells the plant, then the Air Nitrate Corporation does not operate it and does not receive any operating fees. That is our understanding of the contract. Let us cut that out.

Mr. MILLER. Then, you have a million dollars left.

Mr. HAMMITT. That leaves us dependent upon royalties, and our claims for royalties under our patents under this contract and under the license Mr. Ford would receive, as the basis for our compensation against losses due to his being enabled to carry on subsidized competition against us. I state to you frankly that we do not consider that as adequate protection, and that is the reason we are pleading for the protection that we understand is contained in the terms of the contract. It is a matter of business judgment whether it is adequate protection or not, and it is our business judgment that it is not.

Mr. MILLER. I hear your explanation. Is there anything else you have in your mind—any other objection to Mr. Ford's taking this plant over—if this offer is accepted. In other words, have you anything in your mind that you have not suggested to me or some other member of the committee?

Mr. HAMMITT. I have not; no, sir.

Mr. MILLER. I understand your statement perfectly clearly. I understand also that if this contract of Mr. Ford should be accepted by Congress and he should run that plant to its full capacity, and your patents are worth anything, and your contract is worth anything, in 10 years you will have received back in royalties $10,000,000 of your $12,220,000 capitalization out of that fund alone. There is the situation for you. If you could get out in the next 10 years ten millions in royalties alone, without tuching a hand to it, it seems to me a pretty good proposition for the American Cyanamid Co., which, as you say, has failed to pay dividends. Here is a fund of a million dollars coming in to your company annually. That is what I am driving at.

Mr. HAMMITT. Yes; and I am saying, Congressman, that as a matter of business judgment, taking into consideration all of the elements that have been suggested, we do not think that is satisfactory protection.

Mr. MILLER. Then, there must be some other angle, something else, Mr. Hammitt, that would put your company against the acceptance of such a proposition as that, because you would be getting 10 per cent on the whole capital stock of your company every year.

Mr. HAMMITT. I assure you that I can not furnish you any further light on that subject.

Mr. PARKER. Mr. Hammitt, on page 23 and the following pages of that contract there is a license agreement for the use of the patents, which agreement was made between the American Cyanamid Co. and the United States. Could this plant be operated at all without that license during the life of the lease?

Mr. HAMMITT. It could not.

Mr. PARKER. I see, on page 24, that the first license given by this company is before and during the time the United States shall remain in the present war, and in any event until June 1, 1921. And on page 27, article 6, it is for the first 91,700,000 pounds of nitrogen, and an amount equivalent to 6 mills per pound. How many pounds of nitrogen are there in 110,000 tons of ammonium nitrate?

Mr. HAMMITT. Approximately 42,000 tons; that is, short tons, 2,000 pounds to the ton.

Mr. PARKER. How many pounds is that?

Mr. HAMMITT. Eighty-four million pounds.

Mr. PARKER. How many pounds of nitrogen are there in a ton of nitrate?

Mr. HAMMITT. Eight hundred and forty pounds.

Mr. PARKER. At 6 mills a pound, how much is a ton?

Mr. HAMMITT. That is $5.04.

Mr. PARKER. That is a pretty fair tax on the price of the stuff; it is one-tenth on it, is it not? It costs $50 a ton?

Mr. HAMMITT. This ammonium nirate you are speaking of, Congressman, is not the $50 a ton material. I do not know what it is selling for now; but it sold for about $350 a ton during the war.

Mr. PARKER. I pass now to what happened after the war, and I want to ask you about article 10, page 9, which provides that at the expiration of the war the charge shall be 1½ cents per pound unless changed by arbitration.

Mr. HAMMITT. Yes, sir.

Mr. PARKER. How much is that per ton?

Mr. HAMMITT. That is $12.60.

Mr. PARKER. How much would that be on 110,000 tons?

Mr. HAMMITT. As I have stated in my previous testimony, it amounts to somewhere around a million dollars.

Mr. PARKER. Suppose you multiply $12.60 by 110,000; what then will you get?

Mr. HAMMITT. That would be $1,300,000.

Mr. PARKER. At the old rate it would not be as high as Mr. Miller stated. I think it will probably be 110,000 times $5.04, which will make about $550,000 a year. I see by the provision on page 31 that the American Cyanamid Co. obviously intended and expected that the United States would sell to others, because it provides that "the license fee"—that is, the United States—"may transfer to the purchaser of any one or more of said plants the right to avail itself of the license in this article granted in the operation of the plants so purchased, if said purchaser, as a term of said purchase, expressly covenant to undertake, observe, perform all the terms of this article, including the payment of royalties and findings of the said undertakers, if any, after expressly * * * plant or plants so purchased."

Mr. HAMMITT. Without that provision there would be no value in the provision authorizing the United States to sell the plant.

Mr. PARKER. That is very true; but this is a provision for purchase.

Mr. HAMMITT. Yes, sir.

Mr. PARKER. And construes the other somewhat. Now, I desire to know, returning to the contract itself, whether under the terms of that contract it is or is not true that the United States is bound to pay the operating expenses of a quarter of a cent a pound whether it applies to the agent or not. The contract provides that the agent agrees to operate until June, 1921, or as long as the United States remains in the present war. On page 12, in the paragraph providing for the operation fee it provides "one-quarter of a cent per pound of ammonium nitrate produced in compliance with article 7 hereof." That is $5 a ton, is it not?

Mr. HAMMITT. Yes, sir.

Mr. PARKER. "And accepted or utilized by the United States, up to and including 110,000 tons produced in any fiscal year." That would be $550,000 a year. Now, on page 15, article 17, there is a provision for the termination of the agreement as to any plants, and the United States is to pay for any material on hand, etc.; and also, on page 15, it is provided that if the contract is terminated as to any plant during or prior to the operation thereof by the agent "then the agent shall be paid the sum of money, if any, then due on account of the production of ammonium nitrate in said plants, and the United States shall thereafter continue to pay during the period set forth in article 4"—that is, until the termination of the war, or 1921—"a quarter of a cent per pound." So that this provides for paying the agent whether it operates the plant or not; is that not true?

Mr. HAMMITT. I think that is limited to the period of the war, which has already expired.

Mr. PARKER. During that period, anyway, the United States was to pay that whether it was operated by the agent or not?

Mr. HAMMITT. I think so; yes, sir.

Mr. PARKER. I find in article 18, on page 16, the provision that "nothing in this contract contained shall be deemed to prevent the United States from at any time discontinuing the construction or operation of any or all of said plants, and in the event of such discontinuance the United States shall be under no liability to the agent for any payments as respects such plant or plants beyond those in this agreement specified. In the event that construction or operation is resumed at any of said plants at which construction or operation has been discontinued the provisions of this contract shall govern the rights and obligations of the parties with respect to any such plant to the same effect as though the construction or operation thereof had not been discontinued." Does that apply? Suppose the United States began to operate the plant after the war; would they have to pay operating expenses to the company?

Mr. HAMMITT. Judge Parker, I would like to make the same explanation I made to the chairman in regard to questions that involved the interpretation of the contract. I want the committee to understand I am not a lawyer and do not profess to be able to answer legal questions.

Mr. PARKER. Representing the company, do you say that if the United States was to operate that plant they would have to pay the operating expenses amounting to a quarter of a cent a pound, or $5 a ton?

Mr. HAMMITT. It is my understanding that that operating fee would have to be paid to the Air Nitrates Corporation only as long as it operated the plant.

Mr. PARKER. Now, after the war is over?

Mr. HAMMITT. Yes, sir.

Mr. PARKER. It would, if it had to be operated during the war.

Mr. HAMMITT. It would seem to me that would be the interpretation of the contract.

Mr. PARKER. It was to be paid during the war. But this is not limited to the war. It says, "In the event that construction or operation is resumed at any of the said plants at which construction or operation has been discontinued, the provisions of this contract shall govern the rights and obligations of the parties." I want to be sure you do not claim one-quarter of a cent per pound if the United States should try to operate that.

Mr. HAMMITT. Judge Parker, I am perfectly willing to accept your interpretation of the provisions of the contract, but my understanding is——

Mr. PARKER (interposing). I want to know what your understanding is.

Mr. HAMMITT. My understanding is that there will be no fee for operating of the plant unless the Air Nitrate Corporation operates the plant. That was my understanding as a layman, but just how it is worked out from the provisions of this contract, I would very much prefer that lawyers would pass upon that question.

Mr. PARKER. At the time this contract was made there was a statute appropriating $20,000,000 for plants at Muscle Shoals to produce fixed nitrates for fertilizers or explosives, which plant should be operated solely by the United States, and every provision of this contract, whether money was spent under that statute or not, is entirely in agreement with the statute for the plant is to be operated by the United States through its agents. That is true, is it not?

Mr. HAMMITT. I should say it were true, except possibly for those provisions relating to the sale of the plants.

Mr. PARKER. I am speaking of the provisions for the construction and operation; they are entirely in accordance with, and it seems as if they had been drawn under that statute.

Mr. HAMMITT. I think there is no doubt about that.

Mr. PARKER. That they are in agreement with that statute?

Mr. HAMMITT. Yes, sir.

Mr. PARKER. And your suggestion, I think, is that that statute made no provision for the sale of any of those plants, and you desire to guard against a sale which may be made or suggested by the United States under some other statute or some other power. You want to guard against a sale not provided for by that statute?

Mr. HAMMITT. Yes, sir.

Mr. PARKER. Did you not get notice last July of Mr. Ford's proffer?

Mr. HAMMITT. The only notice we have received of Mr. Ford's offer is the same everybody else has received, namely——

Mr. PARKER (interposing). That was published in the newspaper, was it not?

Mr. HAMMITT. Well, not as early as last July, because that proposition was discussed for months before the details of it were published, but it was published in the newspapers ultimately.

Mr. PARKER. If you had been a private individual and not the United States, and had owned a nitrate plant that required an enormous amount of power and was also very expensive for that reason, and also had owned a lot of water power adjacent to it, which was very cheap, would you not as a business proposition, consider that it was sensible to try to dispose of them together?

Mr. HAMMITT. No, sir: I think I would not.

Mr. PARKER. If you were a private individual who owned power and a plant which could not be made of any value except with that power, would you not think that a good business proposition to try to dispose of them together?

Mr. HAMMITT. No, sir.

Mr. PARKER. You have already testified that without very cheap power that nitrate plant can not be used in the production of any kind of nitrogen with success, and producing under present market conditions.

Mr. HAMMITT. I would say even with a cheap power, as provided under this contract, it could not be so used.

Mr. PARKER. With the present power it can not be so used?

Mr. HAMMITT. I should say it could not.

Mr. PARKER. That plant produces several things which are used in the market. I do not speak particularly of fertilizer, but it also produces calcium carbide in very large quantities. Is it good calcium carbide?

Mr. HAMMITT. There is no reason why it should not produce good calcium carbide.

Mr. PARKER. Is there a great current demand for good calcium carbide?

Mr. HAMMITT. I think that at the present time the calcium-carbide industry is very largely down in the United States and Canada.

Mr. PARKER. Is there a demand for it?

Mr. HAMMITT. There is a demand for a certain amount of it, of course; but the present state of the industry is one of depression.

Mr. PARKER. I do not care for a general statement. How much calcium carbide is made at this factory during the year?

Mr. HAMMITT. They can produce 175,000 tons.

Mr. PARKER. How much calcium carbide is disposed of in the United States and the world at the present time? I mean how much is disposed of in a year?

Mr. HAMMITT. I can not say; I am not at all familiar with the carbide industry.

Mr. PARKER. Is there more than 175,000 tons?

Mr. HAMMITT. I am not sure that outside of the consumption of carbide for cyanamid it is, although I certainly would not want to testify as a witness on the carbide industry.

Mr. PARKER. How much do you use in making cyanamid in the operation of your plant?

Mr. HAMMITT. In the operation of our plant in Canada making 60,000 tons of cyanamid we would use about 40,000 or 45,000 tons of carbide.

Mr. PARKER. It is used more or less all over the world. Is it made better or cheaper in the United States than anywhere else?

Mr. HAMMITT. I doubt if it is any better product in the United States than in other countries. The quality of the product depends, of course, not only upon

the operation, but upon the raw materials. But it is a question of where the raw materials are available.

Mr. PARKER. The limestone there is exceedingly good, is it not; that is, near Muscle Shoals, it is 98 per cent limestone, or something of that sort?

Mr. HAMMITT. The limestone at the Waco quarry connected with that plant is very good calcium limestone.

Mr. PARKER. And a large quantity of it can be got there?

Mr. HAMMITT. Yes.

Mr. PARKER. And is the coke very great or not?

Mr. HAMMITT. We use a high-grade coke which is available for the Muscle Shoals plant.

Mr. PARKER. And the whole cost of carbide, outside of rather cheap materials, lies in cheap power, does it not?

Mr. HAMMITT. Of course, there are many items, but power is a very important item.

Mr. PARKER. Is it not a chief item, besides the limestone and coke?

Mr. HAMMITT. No; you would use a great deal of labor in the manufacture of carbide, which is an electric-furnace operation, and in the plant at Muscle Shoals I suppose 40 per cent of the labor would be in the carbide-furnace rooms.

Mr. PARKER. Labor down there is cheap, is it not?

Mr. HAMMITT. I doubt if that is true to a very large extent. It depends not upon the price you pay for labor entirely, but upon the class of labor that is available.

Mr. PARKER. You also make ammonia gas there, do you not?

Mr. HAMMITT. That can be made at the Muscle Shoals plant.

Mr. PARKER. That is made in large quantities. If you have 110,000 tons of nitrate there would be a large amount of ammonia gas, would there not?

Mr. HAMMITT. Yes; that would be made in very large quantities.

Mr. PARKER. Ammonia gas is another valuable product for a great many manufactures, is it not?

Mr. HAMMITT. No; ammonia in the form of ammonia gas at the present time is a very cheap product, because when we speak of sulphate of ammonia as the product of by-product coke ovens we commonly speak of it as sulphate of ammonia, but as a matter of fact, all of our ammonia comes as the by-product of coke ovens and gas works, and it is usually reported in terms of an equivalent amount of sulphate ammonia. So ammonia is a cheap product, and very much cheaper of manufacture than it can be produced at Muscle Shoals.

Mr. PARKER. As to the cheapness of the production of ammonium nitrate or of the sulphate or of the carbide, they are all affected very much by the cheapness of power.

Mr. HAMMITT. If they are made by the process for which the Muscle Shoals plant was designed; yes, sir.

Mr. PARKER. Yet you still say—and I wish you would say yes or no—that you do not think it would be good business to dispose of the power and the plant at the same time, if you sold them.

Mr. HAMMITT. I do not think that would be the best way to dispose of them.

Mr. PARKER. I think some months ago you heard that the Government was proposing or asking for proposals for the sale of these properties together; that is, the sale of the nitrate plant and of the power plant, and the lease of the water power for a long term of years, at terms of interest on the cost of the water power, and on terms that the nitrate plant should be maintained and kept in operation for the production of components of fertilizers. You heard of that?

Mr. HAMMITT. No, sir; as a matter of fact, I do not think that was the general invitation the Government extended. I think that particular combination was invented by Mr. Ford.

Mr. PARKER. Were not the terms of the agreement or proposal you saw some months ago made by Mr. Ford?

Mr. HAMMITT. Of Mr. Ford's proposition; yes.

Mr. PARKER. Was not the Government's proposition that the water power should go also with the nitrate plant?

Mr. HAMMITT. Not certainly, until after the receipt of Mr. Ford's proposition.

Mr. PARKER. What did the letter say?

Mr. HAMMITT. The letter referred entirely to the water power, as I remember it.

Mr. PARKER. Referred entirely to water power?

Mr. HAMMITT. As I remember it; yes.

Mr. PARKER. Not to the nitrate plant?

Mr. HAMMITT. I believe it did not.

Mr. PARKER. Have you that letter here?

Mr. HAMMITT. I have not.

The CHAIRMAN. The letter is in the record.

Mr. PARKER. Nevertheless, when you got that letter or heard of Mr. Ford's proposal, and when you found that the War Department was asking for proposals upon the property down there, you never made any proposition whatever?

Mr. HAMMITT. We have made no proposition.

Mr. CROWTHER. Speaking about taxes, Mr. Hammitt, was your firm advised as to the fact that the law of Alabama rendered you free from taxation for a period of 10 years on such projects in the state of Alabama?

Mr. HAMMITT. The Alabama law renders those projects free from taxation for a certain period, I believe.

Mr. CROWTHER. You spoke of the difficulty of collecting royalties. Did you have reference to what I have heard lately of the long difficult course through the courts that one Selden had in trying to get some royalties from Ford in connection with a gas engine, and that he also had had difficulties with other companies using his patent and they finally paid him?

Mr. HAMMITT. I think that is one experience generally known.

Mr. CROWTHER. Many other companies did pay this man his royalties?

Mr. HAMMITT. Yes.

Mr. CROWTHER. But Ford finally dragged him through the courts until he defeated him?

Mr. HAMMITT. I believe that is the fact, sir.

Mr. CROWTHER. It seems to me that there is a remarkable resemblance, Mr. Hammitt—and I do not know that it is necessary to read them now—between article 19 of your contract, which has been commented upon as giving a mere preferential right to your corporation, and article 17 of Mr. Ford's contract. It looks as though they might possibly have used article 19 in writing article 17 in their offer, but it seems they even strengthened it a little, to their advantage. For instance, article 19 of your contract closes with this clause, "to purchase the same upon as favorable terms as the United States is willing to accept therefor before the United States shall sell the same to any other party."

Article 17—and I claim no originality for this discovery; Mr. Greene spoke of it as being almost a grant in perpetuity, but it seems to me it is still stronger than article 19, because it says, "In order that said company may be supplied with electric power"—and again these words—"and the farmers with fertilizers, after the termination of 100-year leases, should the United States elect not to operate such power plants but determine to lease or dispose of same, the company shall have the preferred right"—as appears here in article 19—"to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon. If the said leases are not renewed or the property covered thereby is not sold to said company, its successors, or assigns, any operation or disposal thereof shall not deprive the company, its successors, or assigns of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it dur ng the previous 10 years."

So that if it be true that during the previous 10 years there was developed an industry large enough to use all of the power there would not be enough to sell to anybody.

Mr. HAMMITT. That would be my interpretation of it.

Mr. CROWTHER. So that there is in section 17 a still stronger preferential clause even than there is in section 19 of your contract. They still maintain the same right under it to have a preferred status as to negotiations, and then if it is sold they still hold that they are to be supplied with the amount of power they have averaged during the previous 10 years of use; and the possibility might arise that they would have used all of the available power, so there would be nothing to sell.

Mr. HAMMITT. I will say if the Congress decides in carrying out the provisions of our contract to offer the Muscle Shoals project to us on the terms on which Mr. Ford proposes to take it, we would give very careful consideration to that provision of the contract.

Mr. CROWTHER. While there has been considerable criticism of article 19 of your contract, it looks to me as though article 17 of the Ford offer is still stronger and gives them a greater hold on the property, because they might develop industries there that would use in the previous 10 years all the power,

so that there would be nothing whatever to sell. Is there any calcium carbide be ng imported into this country, do you know?

Mr. HAMMITT. I do not think there is any calcium carbide being imported at the present time. The Union Carbide Co., I think, some times delivers carbide in the United States from its plant on the Canadian side of Niagara Falls.

Mr. CROWTHER. Just what component part of explosives is ammonium nitrate? Is that the product that by distillation produces nitrous oxide?

Mr. HAMMITT. You have gas before you get ammonium nitrate. The ammonium nitrate produced at Muscle Shoals was to be used with T. N. T., and to produce a bursting charge and an explosive known as amotol was to be used. That is rather an interesting situation regarding the Muscle Shoals nitrate plant, because if you keep that plant in stand-by condition, and it does require a period of months to get that plant in operation in case we go into a war, the product of that plant is not of any use until you have other plants in operation. You have to get a T. N. T. plant in operation before you can use ammonium nitrate. And those plants have been scrapped. You have ultimately got to have your propellant charges which were to be made at Nitro and Old Hickory plants, which have been scrapped. Those plants would have to be set up again, or else any immediate production of ammonium nitrate would merely clog the railroads with a considerable amount of shipments which would not have anywhere to go and there would be no way to use them.

Mr. CROWTHER. In other words to make this a valuable adjunct to the War Department there should be maintained in stand-by condition several other plants for the production of several other ingredients to make this one available; they must all work together?

Mr. HAMMITT. They must all work together, and there would certainly be no opportunity to use the product of the Muscle Shoals plant successfully until some of these other things were also ready.

(Thereupon the committee adjourned at 5 o'clock p. m., to meet to-morrow, Tuesday, February 21, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Tuesday, February 21, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MR. J. O. HAMMITT—Resumed.

The CHAIRMAN. Mr. Hammitt, the committee will be very glad to conclude with you this morning, and Mr. Wurzbach would like to ask you some questions.

Mr. WURZBACH. Mr. Hammitt, what is cyanamid?

Mr. HAMMITT. Cyanamid is a form of fixed nitrogen which is produced by soaking up all the nitrogen gas you can soak up into calcium carbide and then preparing it in a form in which it can be practicably used in a fertilizer mixing plant. It has approximately 25 per cent of ammonia.

Mr. WURZBACH. Did you explain why the Air Nitrates Corporation could not make an offer now for the nitrate plant if the nitrate plant was separated from the water-power proposition?

Mr. HAMMITT. Yes, sir. Assuming that the situation were all laid out clear, so that it was perfectly practicable to make a disposition of the nitrate plant separately from the water power, we would not be able to make a proposition for the nitrate plant, because we can not work out any manufacturing program for that nitrate plant that could be commercially successful, unless it received aid from the Government, and a proposition involving aid from the Government we believe is against public policy, as involving an indirect entrance of the Government into private industry.

Mr. WURZBACH. If that is true, then the option you have under section 19 is such an option that you could not avail yourself of it if you were given the right to avail yourself of it, by your own admission?

Mr. HAMMITT. No; because while we will not make the Government a proposition for the operation of the plant with financial aid from the Government, if the Government decides that it is going to provide for the operation aided out of the Government Treasury; if, for example, the Government should decide that this proposition of Mr. Ford's would be acceptable to the Government, then

we would have something we could do business on, of course. It would not be in accordance with our judgment of the way contracts ought to be made with the United States Government but it would protect the interests of our stockholders.

Mr. WURZBACH. But aside from any governmental aid or subsidy, suppose that the Ford offer had not been made or suppose that it were withdrawn from all consideration, and the Government were to separate the nitrate plant from the water power, and in accordance with article 19 would give you notice and would ask you to make a bid, you would not be able to make any kind of bid at all?

Mr. HAMMITT. Under article 19 what the Government would give us would be a notice that would contain a statement of the best terms upon which the Government was prepared to dispose of that plant. Now, we believe that the Government is not in a position to offer terms that will protect the Government that we would accept; but if the Government should offer us terms, then it would no longer be any part of our function to consider whether those terms protected the Government; that would have been decided by responsible governmental authority, and we would give very careful consideration to the question of whether we could take over that nitrate plant and operate it on those terms, and it is our belief that we would be in at least as good a position, and very likely in a better position, to work out an operation of that plant, as soon as a situation arises where such an operation is commercially feasible, than any other party.

Mr. WURZBACH. But there is nothing in article 19 that either expressly states or implies any Government aid to the corporation or individual contemplating the purchase of the nitrates plant, is there?

Mr. HAMMITT. Nothing whatever, as I read that article.

Mr. WURZBACH. Nothing at all. Now, putting aside or taking out of consideration the Ford proposal altogether, and assuming that the Government would suggest to the Air Nitrates Corporation that they intend to sell this property for cash.

Mr. HAMMITT. Yes, sir.

Mr. WURZBACH. Would the Air Nitrates Corporation be in a position to avail themselves of that article 19 and make an offer; and, if so, what offer would they be able to make?

Mr. HAMMITT. It is my opinion that the Air Nitrates Corporation would not be in a position to offer to purchase the plant under those conditions.

Mr. WURZBACH. What is the financial ability of the Air Nitrates Corporation?

Mr. HAMMITT. The Air Nitrates Corporation is able to pay its bills, sir, and it is able to conduct its present operations and it has good credit. The financial capacity of any relatively small industrial unit, such as Air Nitrates Corporation, to take over a new proposition is always dependent upon the soundness of that new proposition, among other things, and if the new proposition were an attractive proposition financially and one that promised to be able to earn interest on bonds that might be issued for the purpose of financing it, the Air Nitrates Corporation could present that matter to those whose business is finance and doubtless could get a hearing before them, and if the proposition were sound, could get that cooperation which every corporation requires to get when it expands in financing. It would be most uneconomical for a corporation with the business that the American Cyanamid Co. has to have an enormous bank account, because that would merely mean so much money that was not put to work. The Air Nitrates Corporation, or rather I mean the American Cyanamid Co., has not money that has not got to work. The Air Nitrates Corporation is merely a subsidiary of the American Cyanamid Co.

Mr. WURZBACH. The option inures, however, only to the Air Nitrates Corporation and not to the American Cyanamid Co., does it not?

Mr. HAMMITT. The option is a right of the Air Nitrates Corporation, and the Air Nitrates Corporation is owned entirely by the American Cyanamid Co., and I would be deceiving the committee if I did not make it clear to the committee that the American Cyanamid Co. is the real party in interest.

Mr. FIELDS. Mr. Hammitt, where is the home office of the American Cyanamid Co.?

Mr. HAMMITT. 511 Fifth Avenue, New York.

Mr. FIELDS. What is the extent of its operations in the United States?

Mr. HAMMITT. It has a phosphate mine in Florida; one of the largest of the Florida pebble phosphate mines, involving an investment of approximately $5,000,000, without the actual figures before me. It has a plant on the New

Jersey side of New York Harbor involving an investment of something over $3,000,000, a part of which has been written off as depreciation, bringing the amount of that investment down to something over $2,000,000. It has a plant in California, which is a relatively small plant, but engaged in the very important business of manufacturing hydrocyanic gas for the fumigation of citrus trees in California.

The CHAIRMAN. In what part of California?

Mr. HAMMITT. It is near Los Angeles.

Those are the plants of the American Cyanamid Co. in the United States. To complete the story, its only other plant is located on the Canadian side of the Niagara River at Niagara Falls.

Mr. FIELDS. And that is its big operation?

Mr. HAMMITT. The size of the investment in that plant, so far as not amortized, is a little under $3,000,000. I would not say it was its big operation in normal times. At the present time the main business of the American Cyanamid Co. has nothing whatever to do with the fertilizer industry and consists of products made at Niagara Falls, Canada, and at Azusa, Calif., which is the location near Los Angeles.

Mr. FIELDS. What connection has the American Cyanamid Co. with the Alabama Power Co.?

Mr. HAMMITT. It has absolutely no intercorporate connection of any character whatever.

Mr. FIELDS. None of the stockholders of the American Cyanamid Co. own stock in the Alabama Power Co.?

Mr. HAMMITT. I could not say that as to all of our stockholders, but I will say that no one owning a very large, substantial interest in the American Cyanamid Co. owns a large, substantial interest in the Alabama Power Co. I think it is entirely possible that some of our stockholders may have stock in the Alabama Power Co. or own some of their securities.

Mr. FIELDS. It is highly probable, is it not, that some of the stockholders of the American Cyanamid Co. own stock in the Alabama Power Co.?

Mr. HAMMITT. I think it is probable to this extent: There is one banking house in London that at one time handled some of our securities, and, according to my information, has handled securities of the Alabama Power Co., and that is Sperling & Co. Sperling & Co.'s interest in the American Cyanamid Co. is entirely through stock ownership, for we have no bonds, and the amount of stock in American Cyanamid Co. that they own, I should say, does not amount to more than 6 per cent; and when I state that I am including not only the stock that Sperling & Co. probably actually own but I am speaking also of the stock that Sperling & Co. were engaged in marketing.

Mr. FIELDS. What connection has the American Cyanamid Co. with the Georgia Railroad & Power Co.?

Mr. HAMMITT. None whatever.

Mr. FIELDS. None of its stockholders own stock in the Georgia Railroad & Power Co.?

Mr. HAMMITT. Not to my knowledge.

Mr. FIELDS. What connection has it with the Columbus Power Co.; that is, what connection has the American Cyanamid Co. with the Columbus Power Co.?

Mr. HAMMITT. None whatever.

Mr. FIELDS. What connection has the American Cyanamid Co. with the Central Georgia Power Co.?

Mr. HAMMITT. None whatever.

Mr. FIELDS. Has it any connection with the Tennessee Power Co.?

Mr. HAMMITT. It has none.

Mr. FIELDS. The reason I am asking these questions is because I notice that Mr. Duke and the representatives of these four companies are apparently agreed as to their opinion of the production of power at Muscle Shoals.

Mr. HAMMITT. Yes.

Mr. FIELDS. And I thought there might be some connection between the companies because their minds so thoroughly agreed upon that subject.

Mr. HAMMITT. There is no connection whatever.

Mr. FIELDS. You say that the Air Nitrates Corporation is a subsidiary of the American Cyanamid Co.?

Mr. HAMMITT. Yes, sir.

Mr. FIELDS. And you claim that the Government of the United States is morally, if not legally, bound to sell nitrate plant No. 2 to the Air Nitrates Corporation by reason of article 19 in this contract?

Mr. HAMMITT. Providing, in the first place, the Government determines to sell it; and, in the second place, Air Nitrates Corporation is prepared to pay for it as good a price as anybody else is prepared to pay.

Mr. FIELDS. I notice that article 19 does not apply alone, as I construe it, to plant No. 2 at Muscle Shoals, but also to plants 3 and 4 in Ohio.

Mr. HAMMITT. That is true.

Mr. FIELDS. Is the Air Nitrates Corporation in a position and ready to submit a proposition to the Government on plants 3 and 4?

Mr. HAMMITT. Those plants were not completed, Congressman; and quite in accordance with our views, and I think in accordance with the advice that in response to inquiry we gave to the Government, those plants have been dismantled.

Mr. FIELDS. They have already been dismantled?

Mr. HAMMITT. Yes, sir.

Mr. FIELDS. I knew they were not completed, but I did not know they had been dismantled.

Mr. HAMMITT. Yes, sir; they have been.

Mr. FIELDS. Now, with regard to public policy, you contend that as a matter of public policy the Government and the Congress should recognize this contract in article 19?

Mr. HAMMITT. I do. I think it is proper public policy for the United States Government to live up to the agreement that it has made, and as, of course, I have made clear to the committee, I consider this an agreement which the United States Government has entered into, and that there is no objection to it except one that is based upon legal technicality.

Mr. FIELDS. Now, let us see about that. Let us forget, for the moment, your connection with the Air Nitrates Corporation and my connection with the Government, except our connection as citizens.

Mr. HAMMITT. Yes, sir.

Mr. FIELDS. As a matter of general public policy, would you feel that the agents of the Government should be bound in their transactions with corporations or individuals who are negotiating with the Government by the Constitution of the United States and the laws upon the statute books, or by their own desires or what they might desire to accomplish upon the spur of the moment? As a general policy, which would you recommend?

Mr. HAMMITT. As a general policy, I am certainly in favor of sustaining the Constitution and the laws.

Mr. FIELDS. Then as a general policy, if you are in favor of sustaining the Constitution and the laws, why would you make an exception in this particular case?

Mr. HAMMITT. In the first place you do not want to put me in the position of appearing to state that this is an exception, because, of course, you recognize the fact that we do not think it is an exception. We think that this provision is entirely valid, but assuming that there was a sound, legal objection to the validity of this particular provision, I would have in mind the fact that at the time this contract was made there were a great many unusual things which the Government was required to do. Everyone, certainly, who was familiar with the experience of the Government in its endeavor to mobilize American industry recognizes that fact.

Now, not only were there a great many unusual things to do, but there were a great many things that had to be done under very great pressure; and in addition to that there was a very considerable amount of very unusual emotion in the country that is always an incident of a thing like this World War. Feeling ran very high. If a matter upon which there had been very competent legal advice, taking it in the ordinary terms, if regarding a matter of that sort, as to which there had been very competent legal advice, the American Cyanamid Co. had said, "Well, now, there is a little legal doubt as to whether that particular provision will hold, despite this advice we have received, and we will not risk entering into that kind of a contract," you know that the officers of the American Cyanamid Co. would have been considered pro-German. Their lives would not have been very pleasant in these United States, and I say that it is entirely proper that it should be so. So that I think I would consider, as to this particular contract which, as I have said, I believe in this particular provision is valid, and will hold in the courts, but assuming that there were a shade of doubt about it, I think, under those circumstances, I certainly would resolve the shade of doubt in favor of carrying out this contract; and I will say that if you do not do that it is more than likely that a most careful and meticulous legal examination of a great many contracts that were made at that time, during the war, might

lead you to raise similar question regarding them. Now, all of this, I am stating, Congressman, in an effort to give a complete answer to your question. I want it clear on the records that all of it is predicated on a thing being a fact which I do not admit as being a fact, and do not believe as being a fact, namely, that there is any substantial doubt as to the legality of that provision of the contract.

Mr. FIELDS. In reply to your suggestion that a failure on the part of the Government to recognize this contract may lead to an investigation of other contracts, I want to say in that connection that if other illegal contracts were made under the conditions to which you refer, this one being made on the 18th day of July just as our Armies were starting their drive in Europe, when the public mind was not centered upon contracts or their legality, but upon winning the war, if any corporation or firm or individual at that time and under that stress, with the aid of the most able counsel that the United States has, succeeded in securing illegal contracts, not authorized by the Constitution of the United States and the laws of the United States, they ought every one to be contested, and I for one hope that that may be done.

Now, let us take up the question again of the moral obligation. A few days ago I asked Col. Burns, who was counsel for the American Cyanamid Co. He was not able to tell me. I was sure they had able counsel, and I learned from you yesterday that their counsel was Mr. Justice Hughes, one of the most honorable citizens of the United States, and possibly the most able lawyer in the United States.

Mr. HAMMITT. Now, Congressman, do not——

Mr. FIELDS (interposing). Wait until I finish my statement. I am not saying anything that is disparaging of Mr. Hughes, and I am not going to.

Mr. HAMMITT. But you are stating——

Mr. FIELDS (interposing). But, of course, when the cyanamid company told him what they wanted, that they wanted to construct this plant on a cost-plus basis and wanted a royalty fee and an operation fee and an option upon the plant in the event the Government should decide to sell it, he, as an attorney and an honorable man, proceeded to draw their contract for them as strong as it could be drawn, and nobody criticizes him for that.

Mr. HAMMITT. Now, Congressman, in the first place——

Mr. FIELDS (interposing). I have not finished my statement.

Mr. HAMMITT. All right, sir.

Mr. FIELDS. We want to come again to the moral obligation of the Congress and the Government upon a contract of that kind.

Mr. HAMMITT. But you are not going to leave that other statement in the record without allowing me to correct the facts regarding our retainer to Justice Hughes. It was not a general retainer. He was not our attorney.

Mr. FIELDS. He was your counsel upon this proposition.

Mr. HAMMITT. As to the matter of the drafting of this contract our attorneys were Messrs Sullivan & Cromwell. Justice Hughes was called in solely to advise regarding this one particular point, as to the form of protection that we could receive, and I do not want to have the record appear that Justice Hughes's part in this matter was any greater than it was. Now, I think that does not affect your subsequent statement at all, and you must be glad to have the record correct.

Mr. FIELDS. Yes; I am glad to have you make that statement, because it brings out another thought. Messrs. Sullivan & Cromwell were able attorneys, I assume, or they would not have been in the employ of the American Cyanamid Co.

Mr. HAMMITT. Their reputation does not depend upon this particular retainer. They certainly are able attorneys.

Mr. FIELDS. But for some particular reason, unknown to the committee, Mr. Justice Hughes was called in for consultation upon this contract or upon this particular provision of the contract.

Mr. HAMMITT. And if the committee does not know the reason, I would like to state it to the committee, which is that we desired to have the very best legal advice on that point we could get in the United States, and we suggested, to that end, the retention of Justice Hughes to advise on that point to the officers of the Government, and found that it was satisfactory to them, and were so advised by them, and thereupon Justice Hughes was called in.

Mr. FIELDS. Well, Mr. Hammitt, you evidently had a lingering suspicion that you were about to involve the United States in an illegal contract or at least a contract about which there was a great deal of question as to its legality.

Mr. HAMMITT. No; we simply had a very difficult problem as to how we should provide the kind of protection that the American Cyanamid Co. desired and the Government officers agreed it should have, and to do it in a legal way. We had never had any expectation of writing an illegal contract, and if there had been any doubt whatever at that time as to the legality of this contract, after the matter had been considered by the attorneys, we would have sought our protection in some different way and surely would have found a legal way.

Mr. FIELDS. Well, how could you have found a legal way other than to have come to Congress.

Mr. HAMMITT. Well, wherever we would have had to go or whatever we would have had to do, I am perfectly confident that we would have found a legal way, and just what form that would take and just how that thing would be worked out is a question, as you have observed, that very able attorneys were engaged upon, and not being an attorney of any sort myself, I certainly do not want at this time, after the facts, to suggest how it would have been done.

Mr. FIELDS. You would not have refused to have constructed that plant for the Government, for which they paid you $1,500,000, if the Government had refused to give you this option, would you?

Mr. HAMMITT. As to the construction of that plant for which we have received no money that we have not had to pay back, the American Cyanamid Co., I imagine, if faced with a situation where that thing had to be done, in a way that would give the American Cyanamid Co. no protection whatever in the future—in other words, if it had to be done on the basis of the American Cyanamid Co. paying the cost of the war at the expense of its stockholders instead of its being paid by the United States Government, we would have been faced with a problem that I confess I do not know just how it would have been worked out, but I am very strongly impressed with the fact that it is conceivable that under those circumstances, without any protection whatever, the American Cyanamid Co. would have felt compelled to contribute what it could contribute and trust to the fairness of the Government in the future, through its legislative as well as its executive branches, in protecting the American Cyanamid Co. against destruction as a result of what it had contributed. Now, that situation we did not face, because even if we had been advised that this thing was invalid, we would have exhausted, no doubt, the possibilities of finding some form of protection that would have been clearly valid. Now, just what form that would be, as I said before, I can not specify or speculate regarding at all, but I know that we would have looked for some other form of protection if there had been any doubt about the validity of this.

Mr. FIELDS. Article IV, section 3, clause 2, of the Constitution reads in part: "The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or property belonging to the United States."

Upon your contention that you think it was a legal contract, do you mean for the record to show that you contend that you believe that Mr. Justice Hughes, for many years an Associate Justice of the Supreme Court of the United States, was not familiar with that clause of the Constitution?

Mr. HAMMITT. No; I am quite sure he was familiar with it.

Mr. FIELDS. Then, every Member of Congress at the beginning of each session takes an oath to support and defend the Constitution; and, in view of the fact that your chief counsel knew that the Constitution contained that language and that a Member of Congress takes an oath to support and defend the Constitution, you claim that this contract should carry more moral force with the Congress that the Constitution and the oath that they have taken to support it.

Mr. HAMMITT. I certainly do not claim that any contract should carry more moral or binding force in any way than the Constitution of the United States.

Mr. FIELDS. Very well. I am glad to hear you say that.

Now, in regard to the exercise of your option. It seems that—following you as carefully as I can—there is hardly any course that the Government can take in line with the principles implied in other Government contracts or with the sound, honorable ethical methods of business that will enable you to exercise your option: just what would the Government have to do?

Mr. HAMMITT. I think it is an actual fact, Congressman, and this is undoubtedly what you are coming to in your consideration of the matter; that that nitrates plant down there can not possibly be operated by the American Cyanamid Co. or by anybody else at the present time upon a commercial basis without sustaining a loss. Therefore, if the United States Government is to

provide for its operation on a commercial basis, the United States Government must bear that loss or somebody else must, and the American Cyanamid Co. is unable to do so.

Mr. FIELDS. Well, did the American Cyanamid Co. have that thought in mind when it drew this contract?

Mr. HAMMITT. I would not be able to say whether the American Cyanamid Co. at that time was able to project as to what the situation regarding a commercial operation of that plant would be after the war. And, right at that point, let me tell you one reason why it would have been very difficult to project it. You take the year 1914, before the World War, and you take the whole history back for a considerable period of years before we entered into the World War, the amount of sulphate of ammonia produced in the United States in those years was very insufficient to meet the American requirements, and we were importing somewhere from 60,000 to 100,000 tons of sulphate of ammonia annually, mostly from Great Britain. Now, along came the war, and the capacity of the by-product coke ovens built up to meet war needs and in some cases——

Mr. FIELDS (interposing). Which was an abnormal condition, of course.

Mr. HAMMITT (continuing). And in some cases, aided with the advance of Government funds for that purpose, built up under pressure to meet war needs, so expanded the American production that it went up from approximately 185,000 tons to 500,000 tons; and, so, in the year 1920 and even in the year 1921, with the steel industry very largely down, we have had a surplus of sulphate of ammonia in the United States for export and have exported as much as approximately 125,000 tons in one year, instead of importing 100,000 tons.

Mr. FIELDS. Oh, yes; but you are not taking into consideration the depressed condition in agriculture whereby agriculture did not consume the amount of fertilizer or the amount of ammonium nitrate that it did under normal conditions.

Mr. HAMMITT. But the total amount of consumption of ammonia in the United States in the most banner and bumper year for agriculture and for everything else never approached the present production capacity of the by-product coke ovens and the gas works, and we have become a large exporting Nation. And there is another thing I did not take into account in that statement. The same expansion in that industry for producing ammonia as a by-product which occurred in the United States during the war also occurred during the war in Germany. It occurred during the war in England. It occurred during the war in France. So that when we go into the export market with our surplus products we are meeting an over-expanded industry in those other countries; and it is a fact that you are paying now, if you buy sulphate of ammonia, less than one-half the price for it that you were paying for it a few years ago.

Now, I am not sure that the American Cyanamid Co. engaged at that time in negotiation with the United States Government was able to forecast that situation, and therefore I am not at all sure that the American Cyanamid Co. would have been able to say at that time that after the war it was not practicable to operate this plant on a commercial basis; but we can say it now, with our knowledge of the facts.

Mr. FIELDS. In that connection, if fertilizer products could be produced more cheaply than they have been produced, that would naturally increase the demand for them and the consumption of them in the United States, would it not?

Mr. HAMMITT. Yes; it would. I think that is undoubtedly true. I think that the quantity of fertilizer that is sold is very materially affected by the price, and I think that that matter must be of very great concern to the fertilizer industry, which at the present time has a capacity in this country of 10,000,000 tons and has a market of less than 5,000,000 tons.

Mr. FIELDS. And that should be a matter of great concern to the consumers and users of fertilizer.

Mr. HAMMITT. It certainly should, because the price of any product is of importance to the consumer.

Mr. FIELDS. And if, by any method, the cost of production can be lessened, the users of fertilizer certainly must be entitled to some consideration in an analysis of that problem.

Mr. HAMMITT. Yes, Congressman; and that consideration, I think, does not extend to this point: I do not think that the money of the taxpayers should be taken out of the United States Treasury to make up the losses of a manufacturing operation in order to dump more sulphate of ammonia on the market in order to depress the price of sulphate of ammonia still further. That I do not think should be done even for the purpose of reducing the price of fertilizer. Now, that is irrespective of the question of what effect that would have upon the price of the fertilizers, which would be exceedingly small; but if you are going to attempt to examine me on a fertilizer question, let me take you further into my confidence and say I am not a fertilizer manufacturer. I do not know anything about fertilizer manufacturing except in a very general way. I am engaged in a chemical manufacturing business, one of whose products goes into the fertilizer industry, but my knowledge of the fertilizer industry is extremely general, and I think it would be to the interest of this committee, if it wants to examine into a fertilizer question, to call before it somebody—and the committee has not had anybody here yet—who has had some practical experience in the manufacture of fertilizer.

Mr. FIELDS. I had no thought of going into that.

Mr. HAMMITT. I do not want to qualify as a fertilizer manufacturer.

Mr. FIELDS. Your reference to the price of sulphate of ammonia led to the question I asked, but let us get back to plant No. 2. I would like to understand, if possible, just how you expect the Government to proceed to make a proposition to sell this plant to the Air Nitrates Corporation. I have never been able to get that straightened out in my mind from your statements, and I am very anxious to do that.

Mr. HAMMITT. Now, of course, the United States will have to adopt its own methods, and would not necessarily accept what I think, personally, would be the most satisfactory method, but whatever method it adopts, and I am perfectly willing to suggest what I think would be the most satisfactory method before I get through; but first let us lay down the general principles, that under this provision of the contract the first thing the United States must do must be, in some form or other, to reach a decision to dispose of the plant. Then having reached that decision it must communicate in writing, through whatever body it sets up as the proper authority to do that, to the Air Nitrates Corporation the fact of its determination to dispose of its plant, and the material terms upon which such disposition will be made, and then the Air Nitrates Corporation has something before it to consider, something that can be considered by its directors and its stockholders, and something that can be considered by the bankers; and it is to have a reasonable time for such consideration, and such reasonable time is not to exceed six months, and I do not think the reasonable time will reach six months, because a matter of that sort will receive very prompt and very thoroughgoing consideration, and we will start out with a considerable knowledge of what the capabilities and the limitations of the plant are.

Mr. FIELDS. Judging from what you have said here, and what you said on yesterday, I gather that you contend for the right to compete with any offer made by any other individual or corporation.

Mr. HAMMITT. Well, we contend for rather more than that.

Mr. FIELDS. All right; what is it?

Mr. HAMMITT. We contend for the right to purchase that plant on as favorable terms as the Government is willing to make with somebody else. That is, if it is between us and the other fellow, and we are each of us willing to offer precisely the same terms, there is not any competition under this provision of the contract; we get the plant.

Mr. FIELDS. That is the point I wanted to bring out. Suppose the Government should say to you, "We have determined to sell this plant to Mr. Ford for a certain price," we will say the approximate salvage value, $7,000,000, and you come in and say, "We are going to exercise our option." Then somebody offers $10,000,000 for it, and somebody else $12,000,000. Do you expect the Government to hold it open for you and to give you a chance to compete with the other man after he has offered his bid? Do you contend that the Government should not permit others to bid, if they wanted to do so, and would not that be a one-sided proposition?

Mr. HAMMITT. Well, as to whether that offer, delivered to Air Nitrates Corporation, at the $7,000,000 price could subsequently be withdrawn by the Government before it was accepted, being an entirely new point which I have never given any consideration to, I would not want to make any statement upon it. I think that matter would have to be considered by an attorney, and I think your judgment on that, for I judge you are an attorney, would be better than mine.

Mr. FIELDS. No; I am not an attorney.

Now, I believe that you recommended that this nitrate plant No. 2 be maintained by the Government in an idle, stand-by condition.

Mr. HAMMITT. I think that is the best disposition to make of that plant at the present time; yes, sir.

Mr. FIELDS. And that it be maintained indefinitely in an idle, stand-by condition for the use of the Government in case of emergency.

Mr. HAMMITT. Yes; and by "indefinitely" I mean until such time as it is practicable to operate that plant on a commercial basis without loss.

Mr. FIELDS. Then, getting right down to the milk in the coconut, you are not seeking a chance to exercise your option, but you desire to have the Government hold this plant in an idle, stand-by condition, holding it out of competition with the American Cyanamid Co., at an expense of approximately $200,000 a year.

Mr. HAMMITT. There are several parts to that question, and I have been over this so frequently that I thought my position was thoroughly clear; but let us go over it again briefly. In the first place, we think the best thing the Government can do with the plant at the present time is to keep it in stand-by condition, and the testimony you have had from the Ordnance Department does not say that that costs $200,000, but is now costing $125,000 a year, and that the proposition is self-sustaining in view of the fact that a part of that plant is rented to the Alabama Power Co. for a minimum of $120,000 a year, plus something per kilowatt hour, so that it does not need to cost the Government a cent.

Mr. FIELDS. But in order to get that result——

Mr. HAMMITT. If you want me to answer your question fully——

Mr. FIELDS. I do not want your statement to go in the record uncorrected. In order to get the result to which you refer, they would also have to maintain and operate or lease the properties that the Government owns in conjunction with the Alabama Power Co., the steam plant, etc., to reach that figure; and if the plant was maintained as an individual proposition, in an idle, stand-by condition, it would cost, according to the figures in the record, approximately $200,000 a year. Last year it cost us $201,647.

Mr. HAMMITT. My recollection is different as to the present cost of maintaining the plant, but assuming it is what you say, and assume in order to make——

Mr. FIELDS (interposing). It was less because there were certain credits added from certain incomes.

Mr. HAMMITT. Now, let us assume, as you state, that in order to make the property self-sustaining it is necessary to lease the steam plant. I certainly would lease that steam plant if I could get an income out of it rather than keep that steam plant in idleness. As a matter of fact, if I could lease the nitrate plant on a basis on which the Government would get an income out of it, instead of keeping it in idleness, I would recommend leasing the nitrate plant. When I say that I think the best thing to do with the nitrate plant is to keep it in the stand-by condition, it is because I do not believe you can make any other disposition of it unless you go into the Government treasury to make up somebody's losses. Now, we do not recommend that you give a subsidy to anybody to operate that nitrate plant, but if you are going to give a subsidy to somebody on condition that he operate that plant, we want an opportunity to get that subsidy on as favorable terms as anybody gets it, and we believe that that is the obligation to us under this contract.

Mr. FIELDS. You say you would recommend first that it be leased. Suppose that in the proposal of Mr. Ford he proposed to least nitrate plant No. 2 instead of purchasing it, would you then approve of the Ford proposition?

Mr. HAMMITT. I would not approve the Ford proposition, but it would not violate article 19 of our contract.

Mr. FIELDS. But you would not even then approve the Ford proposition?

Mr. HAMMITT. I certainly would not approve of any proposition that involves the United States Government aiding out of the Public Treasury a particular manufacturer to compete with private industry, and that is what the Ford proposition involves.

Mr. FIELDS. Now, you have emphasized the fact three or four times that the Government would be subsidizing Mr. Ford, because the power produced at Muscle Shoals would be the cheapest in all the country, and yet Mr. Duke, a very prominent figure in your company, I assume, and Mr. Lee, of the Southern Power Co., and the representatives of the four southern power companies that wrote the War Department protesting against the development of Muscle

Shoals, all stated—and I referred to that awhile ago—that the development of power at Muscle Shoals was impracticable, and Mr. Duke went so far as to say that if the Government will build its transmission line over to North Carolina "we will sell them power there cheaper"—I do not remember the figures right now, but considerably cheaper than it can be produced at Muscle Shoals. They characterized the whole proposition as foolish on the part of the Government, because the power could not be produced cheaply, and now you, associated with those gentlemen or some of them, say that it can be produced so cheaply that it would be a subsidy to Mr. Ford. I am frank to say I can not understand the reasoning of you gentlemen. If you are correct, why did these other gentlemen make that representation to the Government; and if they are correct, your premise is entirely wrong.

Mr. HAMMITT. Now, if you can not understand that, Congressman, let me assist you a little bit. I never read the letter of Mr. Duke until I saw it in the record of the hearings before this committee the other day. I have, perhaps, not a very detailed recollection of what the letter stated, but just taking your outline of it and assuming that to be correct, what Mr. Duke says is that if you take that power at Muscle Shoals and you transmit it over to the territory of the Southern Power Co., which is 400 miles away, that by the time you have put that amount of transmission cost into it, on top of the actual cost of developing it, it will be more expensive in the territory of the Southern Power Co. in North and South Carolina than the power they could develop in North and South Carolina by making a similar investment there. Now, that is what he said, according to your outline. I believe that is what he said in his letter.

Mr. FIELDS. Yes.

Mr. HAMMITT. Now, in the case of Mr. Ford, Mr. Ford does not propose to develop this power. What Mr. Ford proposes is that the United States Government develop it.

Mr. FIELDS. But the point I am making is that Mr. Ford——

Mr. HAMMITT (continuing). And then, after the United States Government develops it, he proposes that the United States Government insure it, and that every bit of indefinite obligation regarding it which he can not measure, shall be carried by the United States Government, and he proposes even to require the United States Government to put in more electrical generating equipment than, except during very brief periods of the year, could be used, and then he proposes to pay the United States Government a definite, fixed rental for it.

Now, you have had an analysis of how Mr. Ford comes out on that proposition made by a very eminent water-power engineer on whose judgment, by the way, I think it has been the habit of congressional committees to rely rather more than even on the judgment of Mr. Duke.

Mr. FIELDS. I will say that while listening to that testimony, I thought——

Mr. HAMMITT (continuing). And upon analysis—do you want to permit me to finish my sentence?

Mr. FIELDS. All right; go ahead and finish your statement.

Mr. HAMMITT. And upon that analysis it must be perfectly apparent to the committee that Mr. Ford is getting, if he gets this proposition accepted, the cheapest power on the American Continent, and getting it at the expense of the United States Treasury.

Mr. FIELDS. But it still remains true that Mr. Duke contended in his letter that power could be sold more cheaply in North Carolina than it could be produced at Muscle Shoals.

Mr. HAMMITT. No; he never said anything of the sort.

Mr. FIELDS. Well, his letter speaks for itself.

Mr. HAMMITT. Yes; his letter speaks for itself.

Mr. FIELDS. And it is in the record.

Mr. HAMMITT. Yes, sir.

Mr. FIELDS. Now, you have repeatedly said that Mr. Ford could not produce fertilizer there and compete with the other fertilizer manufacturers. If he can not, why fear him as a competitor?

Mr. HAMMITT. Because his losses would be made up out of the Government Treasury, in the first place. That is the main point. I have never said that Mr. Ford could not operate that plant and make fertilizer and sell it at a loss, provided he could put one hand into the Government Treasury to dip out an amount sufficient to make up that loss and pay him a profit on top of that.

Mr. FIELDS. I can not agree with you that he is putting one hand into the Treasury. He is paying interest upon the investment essential to the completion of it, and if we do not go on and complete it, if we take the advice of your

Mr. Duke and do not complete it, we lose all we have put in, so it is gone anyhow; and if we go ahead and complete it Mr. Ford pays 4 per cent interest, and other substantial fees in connection therewith, upon the amount necessary to complete it.

Mr. HAMMITT. Well, all I can say regarding that, Congressman, is that my analysis of the Ford proposition and your analysis differ.

Mr. FIELDS. I think they do. On yesterday you stated, Mr. Hammitt, it was your understanding that the Secretary of War would not have sent the Ford proposition to Congress if he had believed it would be accepted by the Congress. I am sort of curious to know how you reached that understanding.

Mr. HAMMITT. I am quite sure if I made any such statement as that I was not aware of it at the time.

Mr. FIELDS. I am quite sure you did.

Mr. HAMMITT. If I made any such statement I want to withdraw it because I have no such thought.

Mr. FIELDS. I noticed it created a great deal of interest in the room, and we were all anxious to know just how you had arrived at that understanding, that the Secretary of War would not have sent Mr. Ford's proposition to Congress if he had thought it would have been accepted.

Mr. HAMMITT. If I made any such statement I hope I may have an opportunity to eliminate it from the record, because I certainly had no such thought.

Mr. FIELDS. That statement was made, and I shall object to its being withdrawn. If necessary, I will call for the stenographer's notes.

Mr. WRIGHT. If he wants to explain it, that is all right.

Mr. HAMMITT. Let me say this: I do not believe I ever made such a statement. I do not believe you will find it in the stenographer's notes. But if I did make it, it does not accord with anything I believe, and if I made it I must have been suffering from some kind of mental aphasia when I made it. I do not want the statement to appear as representing my views. I do not believe I ever made it, or that anybody ever got it from anything I said.

The CHAIRMAN. The stenographer's notes will show what was said.

Mr. CROWTHER. It seems to me, Mr. Chairman, that the gentleman ought to have a chance at least to explain it. Very frequently, during the course of our hearings, when a Member makes an unusual statement, he asks that it be not for record. When we reserve to ourselves this unusual privilege, it seems to me it is only fair to extend the same privilege to the witness.

Mr. FIELDS. I am not being unfair; I was seeking an explanation of the statement that was made.

Mr. HAMMITT. My explanation would be that it is not true.

The CHAIRMAN. If the statement was made, the notes of the reporter will show it, and we will have the transcript of the notes in order to determine just exactly what was said. But I think in all fairness, the witness's attention having been called to the alleged statement, he should have a right to explain the statement.

Mr. FIELDS. I do not object to that, Mr. Chairman. I do object to its being withdrawn from the record. He has a perfect right to explain it. I want some information.

Mr. PARKER. Can he not take it back now and say he did not mean it?

Mr. GARRETT. If he was not stating a fact yesterday and says he has stated a fact to-day, he has the right to say so. That is always the rule in regard to evidence. A witness can say that he was not telling the truth on yesterday, and that to-day he is telling the truth.

The CHAIRMAN. I do not think that is quite fair.

Mr. GARRETT. Or that the statement he made yesterday was not correct, and that the statement he is making to-day is correct.

The CHAIRMAN. That is a little better, because, after all, when a gentleman appears before a committee like this committee he certainly should be treated with proper respect. If he has made a statement and it is in the record, and subsequently his attention is called to it and he says it was wrong, he can make any explanation of it that he thinks is necessary.

Mr. FIELDS. An explanation was what I was asking for.

The CHAIRMAN. He should be allowed to correct the statement, but he should not be allowed to withdraw the statement.

Mr. FIELDS. Frequently in the revision of remarks, when a question has not been raised, statements are often withdrawn.

The CHAIRMAN. Of course, some men make statements when they correct the transcript for printing—put in things they never said at all.

Mr. FIELDS. And they withdraw some things that they did say.

The CHAIRMAN. Yes.

Mr. GREEN. May I suggest that all of this colloquy is based, not upon the record but upon somebody's recollection of the record. We will not get anywhere until we have the record before us, and then we can see whether it was said or not.

The CHAIRMAN. I have said the record will be transcribed by the reporters as speedily as possible, and we will find out exactly what was said at yesterday's hearing.

Mr. FIELDS. I am through, Mr. Chairman.

Mr. QUIN. Mr. Hammitt, where are you from, please, sir; what State?

Mr. HAMMITT. New York.

Mr. QUIN. Reared there?

Mr. HAMMITT. Yes, sir.

Mr. QUIN. Who were the 10 gentlemen who composed the organization of the Air Nitrates Corporation? Give their names.

Mr. HAMMITT. I think you are referring, Congressman, to the 10 men whose services were delivered to the Government without charge under the Air Nitrates Corporation's contract. Those men did not form the Air Nitrates Corporation, as I explained yesterday, but it was formed by the American Cyanamid Co.

Mr. QUIN. Who were the 10 stockholders of that corporation? The testimony is that there were 10 stockholders who put in $100 each.

Mr. HAMMITT. That testimony is in error. There is only one stockholder and that is the American Cyanamid Co., and that stockholder owns all the stock. None of these 10 men to whom you refer owns a dollar of stock in the Air Nitrates Corporation, ever received a dollar of compensation from the Air Nitrates Corporation, or ever has had or will have any interest in any possible profits of the Air Nitrates Corporation unless he gets it as a stockholder of the American Cyanamid Co.

Mr. QUIN. Please give us the names of those 10 men you speak of.

Mr. HAMMITT. Those 10 men are Mr. Frank S. Washburn, whose address is Rye, N. Y.; Mr. K. F. Cooper, whose address is Great Neck, Long Island, N. Y.; Mr. O. G. Bond, whose address is at Great Neck; Mr. George A. Hendrie, whose address is Great Neck; Mr. W. S. Stoll, whose address is Rye, N. Y.; Mr. W. S. Landis, whose address is New York City; Mr. George E. Cox, whose address at that time was Niagara Falls, N. Y.; Mr. J. J. Elbert, now deceased; and Mr. R. C. Greene, whose address I think is New York City.

Mr. QUIN. Was Mr. Cooper the same gentleman, the engineer, who testified before this committee a few days ago?

Mr. HAMMITT. No, sir.

Mr. QUIN. They are different men?

Mr. HAMMITT. Entirely different men, and they are not related to each other in any way whatever. You heard Mr. Hugh L. Cooper, and this gentleman I just referred to is Mr. Kenneth F. Cooper.

Mr. QUIN. What time did Mr. Washburn cease to be president of the Alabama Power Co., if you know?

Mr. HAMMITT. I would like, if you want to get that date accurately, to look it up for you. I think it probably was in 1914 or 1915.

Mr. QUIN. What company did you leave to go with the American Cyanamid Co.?

Mr. HAMMITT. I was engaged immediately before I entered the employ of the American Cyanamid Co.—I was employed by Air Nitrates Corporation; immediately before I went to the Air Nitrates Corporation I was engaged in an electrical manufacturing business in which I was a stockholder, a very small business.

Mr. QUIN. You have been with the American Cyanamid Co. since the operation of the Air Nitrates Corporation began at Muscle Shoals?

Mr. HAMMITT. Yes, sir. I spent about seven months at Muscle Shoals on the construction of the Muscle Shoals nitrate plant.

Mr. QUIN. How long a time was the Air Nitrates Corporation engaged in its designing and construction work at Muscle Shoals?

Mr. HAMMITT. The work began in November, 1917—that is, the work of designing. The first ground was broken, as I remember, in March, 1918. The construction was substantially completed and the first product came through the plant, as I remember it, in November, 1918. There was a test operation after that, and a certain amount of finishing-up work that ran over into the

spring of 1919. Now, I should say there were probably 15 or 16 or 17 months, something of that sort, spent on that work altogether.

Mr. QUIN. The Virginia-Carolina Chemical Co. and Mr. Duke own a majority of the stock of the American Cyanamid Co. do they not?

Mr. HAMMITT. No; if you add their stockholdings together you get a very small fraction under one-half.

Mr. QUIN. What stock did Mr. Washburn own in the American Cyanamid Co.?

Mr. HAMMITT. I do not know.

Mr. QUIN. He owns considerable stock, I presume, being president of the company.

Mr. HAMMITT. I do not know the extent of his stockholdings.

Mr. QUIN. Is that the same Mr. Duke who sent the communication to Gen. Beach, Chief of Engineers, of the War Department, as testified during these hearings?

Mr. HAMMITT. Yes; and he sent that communication as the president of a power company.

Mr. QUIN. Of the Southern Power Co.?

Mr. HAMMITT. Yes, sir.

Mr. QUIN. The Southern Power Co. is linked up with the Virginia-Carolina Chemical Co., is it not?

Mr. HAMMITT. Not in any way that I know of.

Mr. QUIN. Is not the Virginia-Carolina Chemical Co. the big high priest in the fertilizer combination or trust?

Mr. HAMMITT. It is one of the largest fertilizer manufacturing companies. I do not believe that under the usual definition of a trust there is such a thing as a fertilizer trust.

Mr. QUIN. It is too cheap, I suppose?

Mr. HAMMITT. You mean the fertilizer is too cheap?

Mr. QUIN. Yes.

Mr. HAMMITT. I do not think that has very much to do with it. I think the point is that there are a great many different fertilizer manufacturers, and one of the largest of them is the Virginia-Carolina Chemical Co.

Mr. QUIN. With Mr. Duke's connection with your company, and the Virginia-Carolina Chemical Co. having all that stock in it, they naturally have a dominating influence in the American Cyanamid Co., do they not?

Mr. HAMMITT. I have no knowledge of Mr. Duke's connection with the Virginia-Carolina Chemical Co. Where did you get that, Congressman? I do not remember anything about that. I certainly have not given any evidence to the effect that Mr. Duke controls the Virginia-Carolina Chemical Co., and to the best of our knowledge he does not. I do not know of any such connection.

Mr. QUIN. These concerns are all hostile to the Government completion of that business and the acceptance of Mr. Ford's proposition to take over and operate that plant, are they not?

Mr. HAMMITT. I do not know the attitude of the other companies, besides the American Cyanamid Co. and the Air Nitrates Corporation. I should think the Virginia-Carolina Chemical Co. would be very much concerned about any proposition to introduce a Government-subsidized competition into the fertilizer industry, but I can not figure out any particular reason for any special interest in the Ford offer on the part of the Southern Power Co. I do not really know what their attitude is.

Mr. QUIN. The proper department of the Government issued an invitation for all who will to come and bid on that Muscle Shoals property, did it not? That was a general invitation?

Mr. HAMMITT. It was advertised as a general invitation, and a special invitation was sent to quite a considerable number of companies.

Mr. QUIN. And Mr. Ford is the only one of all the concerns in the United States who made a concrete proposition to the Government, and that is before this committee at this ime; is that not true?

Mr. HAMMITT. My understanding is that there are other propositions, but that is the only one now before the committee.

Mr. QUIN. I mean it was the only one before the committee up to the time the committee began to consider it?

Mr. HAMMITT. I understand that is the only one before the committee.

Mr. QUIN. Mr. Ford, through his representatives, testified here that this plant could produce fertilizer at 50 per cent less than it is being produced for to-day, and you gentlemen contradict that. What basis have you for your contradiction of what his experts say?

Mr. HAMMITT. We have not said Mr. Ford could not make fertilizer at Muscle Shoals at any particular price, but we have said we do not believe that there is any way that the Muscle Shoals nitrate plant could be effectively used for the production of fertilizer on a basis on which you can sell your product in the American market without sustaining a loss. We do not want to enter into any controversy with Mr. Ford regarding any plans he has. We just express our opinion that we do not think that he can make a profit out of the operation of the nitrate plant, and he has expressed the view that unless he makes a profit he will stop operating.

I have explained in considerable detail to the committee, and I am answering in that way because I do not believe you want me to go all over it again, what I think the plant will produce, and what market they have, and what it will cost for the production. I do not believe you want me to go over that again.

Mr. QUIN. Mr. Ford is backing up his talk with money, is he not?

Mr. HAMMITT. I do not know how you want to interpret it.

Mr. QUIN. His engineer testified here that he was going to put up forty or fifty million dollars down there.

Mr. HAMMITT. I am sure you would not want to make a contract, considering as part of the terms of the contract the testimony of Mr. Ford's representative before the committee. You have not even put me under oath, and I do not suppose you put him under oath.

Mr. QUIN. No; we have faith in the integrity of the gentlemen who come before this committee.

Mr. HAMMITT. Yes; and I presume you also have in mind that you are asked to make a contract with a corporation which will live for a hundred years, and Mr. Ford can not possibly have an active life of more than 15 years longer, so that you have the great bulk of the hundred years period, 85 years, when you will be dealing with somebody else, and you do not know now who he is. I frankly think your confidence may possibly be misplaced, if it is placed entirely in Mr. Ford.

Mr. QUIN. Yes, sir; but this is not 10 men with a hundred dollars apiece that we are dealing with now. The Air Nitrates Corporation is composed of 10 men. Did they put up the hundred dollars apiece? There is no evidence that they paid the $1,000 in there.

Mr. HAMMITT. I wonder if it is necessary for me to state again that the 10 men to whom you refer, whose names at your request, I have read into the record, did not organize the Air Nitrates Corporation, do not own a penny of the stock of the Air Nitrates Corporation, and never did; and never received a penny of compensation from the Air Nitrates Corporation, and, so far as I know, never will, and can not possibly get any profit out of the Air Nitrates Corporation unless they get it as stockholders in the American Cyanamid Co., which is the only way anybody can ever get any profits out of the Air Nitrates Corporation, if it made those profits.

Mr. QUIN. But, Mr. Hammitt, your contract states that this Air Nitrates Corporation was formed for the special purposes of avoiding liability of the Cyanamid company. That is stated in plain language. so its assets would not be responsible.

Mr. HAMMITT. That is one of the reasons why it was formed.

Mr. QUIN. Now, after that corporation was formed, with no assets back of it except a thousand dollars, it undertakes to deal with the 100,000,000 people of the United States, and in that deal it has had itself called the agent of the United States under the terms of the contract; is that not true?

Mr. HAMMITT. It was called the agent under the terms of that contract.

Mr. QUINN. And then this agent of the United States with no assets to back it up went into a deal by which the Government was to put up all the money, and this thousand dollar corporation was to receive a fee which amounted to $1,500,000 for the designing and construction of the nitrate plant.

Mr. HAMMITT. There was that and some other things connected with it, all of which I have explained to the committee, not once, but many times, the net result of which was that the corporation did not make one penny out of the operation.

Mr. QUIN. How much remains unpaid of the fee of $1,500,000?

Mr. HAMMITT. My recollection is that it is something over $300,000.

Mr. QUIN. Then there has been about $1,150,000 or $1,200,000 paid on that fee?

Mr. HAMMITT. I have not the exact figures; I think they are in the record. I think you went over this matter with the officers of the Ordnance Department, and that is in the record.

Mr. QUIN. What lawyer representing the Government was present when the contract was signed?

Mr. HAMMITT. I can not say.

Mr. QUIN. Was there any lawyer for the United States Government participating in this deal?

Mr. HAMMITT. I have no doubt there was.

Mr. QUIN. What is the name of the Army officer?

Mr. HAMMITT. You mean who signed the contract?

Mr. QUIN. Yes.

Mr. HAMMITT. Col. Samuel McRoberts.

Mr. QUIN. Was he the one who began negotiations, or was that Col. Joyes?

Mr. HAMMITT. My recollection—now, as a matter of fact, Congressmen, I had no personal contact with those negotiations, and the committee directed me yesterday to prepare and put in the record a statement showing who were the parties representing the different sides in this negotiation, and I hope you will let me prepare that statement and submit it to the committee in the record.

Mr. QUIN. That will be satisfactory. Is Col. McRoberts in the Army now?

Mr. HAMMITT. No; I think not.

Mr. QUIN. Was he an emergency officer?

Mr. HAMMITT. Yes, sir.

Mr. QUIN. Where was he from?

Mr. HAMMITT. My recollection is that he was vice president of the National City Bank before he went into the Government service.

Mr. QUIN. You mean the National City Bank of New York?

Mr. HAMMITT. Yes, sir.

Mr. QUIN. That is the Standard Oil—Rockefeller—bank is it not? What position did he hold with that bank?

Mr. HAMMITT. I have stated that to the best of my recollection he was vice president of that bank.

Mr. QUIN. Is he there now?

Mr. HAMMITT. I am sure I do not know.

Mr. QUIN. The other gentleman who signed the contract with the Alabama Power Co. was named Williams, I believe. He was out of that same bank, the testimony shows. Did you come in contact with him in your dealings?

Mr. HAMMITT. I did not come in contact with him, and I do not know of Col. Williams as being with the National City Bank. Perhaps you are correct.

Mr. QUIN. That is the testimony. It was testified that he was fixing to sail for the Orient.

Mr. HAMMITT. Yes, sir.

Mr. QUIN. You do not know whether Col. McRoberts is with that bank, or where he is now. You stated you did not know, I believe.

Mr. HAMMITT. No; I do not know. He is a banker by profession, and I presume he is somewhere in the banking business.

Mr. QUIN. That is a contract made on the part of the United States by Col. McRoberts, vice president of the National City Bank of New York, with the Government's own agent, a thousand-dollar corporation, under the terms of the contract, to carry on a work that cost how much in round figures?

Mr. HAMMITT. About $67,000,000 at this particular plant, and the total amount of work done under that contract amounted to about $100,000,000.

Mr. QUIN. The report of the War Expenditures Committee was made on that project. Are you familiar with that?

Mr. HAMMITT. I have read the report; yes, sir.

Mr. QUIN. It speaks of wild extravagance down there in that construction work on which this amount of money was expended.

Mr. HAMMITT. Congressman, I want to tell you perfectly frankly, I believe I have a great deal more confidence in the sanity, and truthfulness—and I do not mean that in any invidious sense—but I mean the fairness in presenting the facts contained in the minority report by Mr. Garrett, of Tennessee, the minority representative upon that subcommittee, than the majority report, regarding the work at Muscle Shoals. In connection with the work at Muscle Shoals, from my familiarity with the work there, I can say it was a job that I personally am proud to have been connected with.

Mr. QUIN. Even Mr. Garrett did not praise it very much, did he?

Mr. HAMMITT. Yes; he did praise it very highly.

Mr. QUIN. Did he say that that money was nicely and wisely expended there? His report is on record here. Did Mr. Garrett say that money was wisely, properly, and efficiently expended?

Mr. HAMMITT. If he had said that he would have said a thing that all of us know could not have possibly been done on a job of that size, where you went into 4 square miles of corn and cotton fields, without adequate roads, without railroad facilities, and in a period of eight months and eight days after breaking ground delivered in operation a nitrate plant which was the largest manufacturing plant of that kind in the world. If anybody thinks that money spent on a job done under pressure like that in wartime was efficiently expended, I should say he had not much practical experience with that kind of work. Of course, it was not economically and efficiently expended, all of it. The main thing is that we had a program to meet, and it was a difficult program to meet. We had a job to deliver a plant that would meet the requirements that had been allocated to us in connection with the 1919 campaign for explosives. We had the very difficult job of getting it through on time. But we did get it through, and if we had not done the best we could in the designing and construction of that plant and had not delivered to the Government a good plant that would work, it would not be necessary for me to-day to plead against the use of that plant to destroy the company that designed and built it.

Mr. QUIN. You said, I believe, that none of those 10 men was on the pay roll of the Government in connection with that work. Is that correct?

Mr. HAMMITT. That is correct.

Mr. QUIN. The war expenditure committee shows here in its hearings the list of the gentlemen who did not receive salaries from the American Cyanamid Co.

Mr. HAMMITT. You mean from the Air Nitrates Corporation.

Mr. QUIN. No; it says from the American Cyanamid Co. That was the one that was the beneficiary, as you said. I notice here the names of Mr. Frank Washburn, Mr. K. E. Cooper, Mr. W. E. Bond, Mr. W. S. Landis, and Mr. R. D. Greene. Then it gives a list of those who did receive salaries from the United States. I presume that is correct?

Mr. HAMMITT. I presume it is.

Mr. QUIN. Do you know Capt. Marberly.

Mr. HAMMITT. I do not think I know him, personally.

Mr. QUIN. He was the gentleman who gave the evidence. He was in charge of the Ordnance Department work in connection with the Air Nitrates Corporation?

Mr. HAMMITT. He was the disbursing officer.

Mr. QUIN. With that construction work under that contract, the Air Nitrates Corporation, the agent of the Government made this contract to hog tie the Government after the Government's activities in war, did it not? In other words, to make it so the United States could not dispose of it, except through the Air Nitrates Corporation, or the American Cyanamid Co., for that is the one it was dealing with.

Mr. HAMMITT. As has been rather frequently stated, the Air Nitrates Corporation negotiated this contract with the Government containing article 19, which you described, the theory being that it would do as you say, although I would not describe it in exactly the same way.

Mr. QUIN. Do you not know that there is a very well-founded law that the agent can not bind the principal for himself against the interest of the principal?

Mr. HAMMITT. I am not a lawyer, and I do not want to discuss principles of law because they are things, frankly, with which I am not familiar.

Mr. QUIN. You say there is a moral obligation for the Government to stand by this contract made under the circumstances that have been related in the evidence before the committee. Do you think that is true, that it is a moral obligation on the part of the Government to do that now?

Mr. HAMMITT. I surely would not have stated it so many times unless I believed it was true. I do believe it is true.

Mr. QUIN. It is natural for you to feel that way, as an interested party, speaking for the principal. You admit that. We are the representatives of the people and you are representing the American Cyanamid Co. and the Air Nitrates Corporation.

Mr. HAMMITT. Your statement regarding whom we represent in this proceeding is quite correct, and I will say the people are very well represented.

Mr. QUIN. If we can not believe in this anomalous situation that has developed here, of the principal being bound by the acts of the agent in this situation, you can not censure us, can you?

Mr. HAMMITT. I certainly could not censure you.

Mr. QUIN. Is it not fair to assume that the great mass of the American people could not feel that they are honestly and morally bound to stand by such a proposition?

Mr. HAMMITT. I believe that, being familiar with the facts, a great majority of the American citizens being educated in the principles of fair play and in the private and public policy of living up to agreements, would take the same position that I have taken before the committee, and if I did not believe that position could be sustained I would not have the temerity to urge it before this committee.

Mr. QUIN. Then, you would agree to the fact that a thousand dollar corporation should handle a $67,000,000 construction and work, with a fee of $1,500,000 to cover the construction of it, and then $560,000 for operation—you believe that would smell good to them? That is what it means.

Mr. HAMMITT. I do not think they would have to analyze that contract with the use of the olfactory nerve at all.

Mr. QUIN. The fact that Mr. Ford has made this proposition and that he has made good on all undertakings in which he has engaged has naturally aroused those interests with whom he would come in competition, has it not?

Mr. HAMMITT. I think it seems to have excited a very general interest.

Mr. QUIN. If Mr. Ford could carry out the contemplated plans there, as testified before this committee, to the great benefit of the American people, you would not characterize that as any subsidy out of the Treasury of this country, would you?

Mr. HAMMITT. Not unless it were a subsidy.

Mr. QUIN. I had not heard of this proposition of a single dollar going into his pocket on any subsidy. The Government completes the dam and then builds another dam. Mr. Ford pays interest on it, and through his payments on the amortization fund he pays it all back, and the great benefits that may flow from that would amount to a great deal more, some of us believe, than the Government would be out in the completion of that work. Is that not true?

Mr. HAMMITT. I do not agree with that analysis.

Mr. QUIN. Then you say you do not believe in any kind of a subsidy. That is, I take it, you do not believe in the railroad subsidy that was paid to some of the southern roads and the subsidy we are talking about now paying to American ships. You do not believe in that?

Mr. HAMMITT. If you consider that pertinent to the inquiry, I will be very glad, if that is what the committee desires, to express my views with regard to railroad and ship subsidies.

Mr. QUIN. Just answer that yes or no.

Mr. HAMMITT. The thing is much too complicated to be answered in that way. It is a subject which involves a great deal of discussion on the floor of Congress, where there are men very much more able to discuss it than I am, and they can not dispose of it with one word on each side.

Mr. QUIN. That is very true, but you did dispose of this proposition of Mr. Ford's by calling it a subsidy.

Mr. HAMMITT. I have been on the witness stand since 10.30 o'clock yesterday morning rather continuously, and I am sure I have said more than one word, and some words I have said over again many times. That is the uneconomical part of it, in my opinion.

Mr. QUIN. Mr. Duke expressed himself in rather a violent manner toward this proposition in his letter to the War Department, did he not?

Mr. HAMMITT. My recollection of the letter which, as I say, I never saw until I read it in the record——

Mr. QUIN (interposing). Inadvisable and foolish are the terms he used.

Mr. HAMMITT. It does not indicate any violence. That is the impression I got from reading the letter.

Mr. QUIN. You did not gather the impression that he was very friendly toward the Government doing that work down there, did you?

Mr. HAMMITT. I gathered that he recommended very positively against the wisdom of the Government doing it.

Mr. QUIN. Then the position assumed by you under this contract by the Air Nitrates Corporation, is that it was a proposition of heads I win and tails you lose in talking with the Government. Was that not the exact kind of deal it was?

Mr. HAMMITT. No, sir.

Mr. QUIN. Then, when they got that fee, if the Government started to sell it, and was bound not to do it under such a contract as was made there, you take it that that was a fair contract?

Mr. HAMMITT. I do; yes, sir.

Mr. FISHER. Will you kindly give us the name of the lawyers employed by the Air Nitrates Corporation or by the American Cyanamid Co. that approved the first agreement which you proposed to submitt to the Government for signature?

Mr. HAMMITT. My impression is that the law firm who represented us in these contract matters was the firm of Sullivan & Cromwell.

Mr. FISHER. Were they your legal advisers up until the day of the signing of the contract, which the evidence here shows was dated in June, 1918?

Mr. HAMMITT. They were.

Mr. FISHER. Did you have other law firms besides Sullivan & Cromwell advising you; I mean about the contract for the nitrate plant No. 2?

Mr. HAMMITT. That clears the question. I believe we had no one, except as I have stated before the committee, that on a special question we called in Justice Hughes.

Mr. FISHER. Can you give us the date when the services of Justice Hughes were retained by your corporation?

Mr. HAMMITT. I can not give the date now, but I will be glad to supply it.

Mr. FISHER. At that time he was practicing law in New York, and was considered one of the ablest lawyers in New York?

Mr. HAMMITT. Both of those things are true.

Mr. FISHER. You submitted to him a proposition that had given your former law firm difficulty, did you not?

Mr. HAMMITT. Undoubtedly.

Mr. FISHER. And that was relating to the matter you have discussed, article 19 of the final contract?

Mr. HAMMITT. Yes, sir.

Mr. FISHER. On so vital a matter to your corporation you certainly got a written opinion from Justice Hughes about that particular matter, did you not?

Mr. HAMMITT. We did not.

Mr. FISHER. Well, he gave an oral opinion to whom?

Mr. HAMMITT. His opinion was expressed in a conference, in which the form of protection that would be extended to the American Cyanamid Co. in this contract was agreed upon. Now, I can not state to you who was present in that conference.

Mr. FISHER. You were not present?

Mr. HAMMITT. I was not present.

Mr. FISHER. Was that conference held in New York City or in Washington?

Mr. HAMMITT. I can not even state whether it was in New York City or in Washington.

Mr. FISHER. As a matter of fact, it was so vital to the corporation that they employed a very distinguished lawyer. Could you give us the name of one of the officers of your corporation, or either corporation, who was present at this important conference?

Mr. HAMMITT. I imagine that undoubtedly Mr. Washburn, the president of the company, was present, and as you understand, Congressman, the reason I appear here in place of Mr. Washburn is that it is absolutely impossible for him to attend to business on account of the present state of his health, and that has been the situation for a year. I may be an unsatisfactory witness to the committee in some respects by not having anticipated some of the things the committee might want, but if there is any detail about these negotiations and the history of them that you would like to have me submit a statement of I will be glad to do it.

Mr. FISHER. Understand, I am not criticizing you as a witness, but I would like to have the name of some person who could testify as to what happened at that important conference.

Mr. HAMMITT. Those records, of course, are just as available in the Ordnance Department as they are in the recollection of anyone who attended that conference.

Mr. FISHER. That is not the question I asked you. There was a private conference when Judge Hughes was present, and there was a serious matter presented which had not been solved by your former lawyers, a very distinguished law firm in New York City. I would like to have the name of one of the officers of your corporation that was present to discuss that serious problem other than that of the man who is now unable to testify.

Mr. HAMMITT. I do not know that there was any other officer of the American Cyanamid Co. or the Air Nitrates Corporation present at that conference, and

there were many conferences at that time at which there was no other officer present than Mr. Washburn. Now, then, I have not the least doubt that Col. McRoberts was present at that conference. I have not the least doubt that there were various representatives on both sides, but we are in the unfortunate position that the attorney who did practically all of the work in advising us with regard to this contract, Mr. Rosencrantz, of the firm of Sullivan & Cromwell, is dead, and the officer of the American Cyanamid Co. who responsibly conducted those negotiations has been unable to come to his office because of a condition of health more than ten times, and then not for more than half an hour or an hour and a half or two hours at a time in a period of 15 months, under definite instructions from his physician, so I am sure that his doctors will not be willing to take the responsibility of his coming down here. In substitution for these witnesses who were present in the conferences, as to whom we have not control, so far as I know, of any except those I have mentioned, and the Government has control of plenty who can testify as to what took place, I should be very glad to submit to you any statement of the facts you would like to obtain, and I am very much embarrassed by reason of my inability to answer all the questions.

Mr. FISHER. I simply asked for the name of an officer of the corporation who was present, and you are unable to give any except the man who you say is unable to testify.

Mr. HAMMITT. Because I think he is the only officer of the corporation who was there.

Mr. FISHER. As I understand it, it is the custom to consult a great lawyer on a very technical proposition like this, and in that case is it not the custom that such a lawyer always gives a written opinion on it? Is it not possible that there may be a written opinion that was given by Judge Hughes.

Mr. HAMMITT. No; because I definitely made inquiry about that, knowing that the committee would want to know those facts, and I was definitely informed that there was no written opinion.

Mr. FISHER. May I ask when that inquiry was made, and did you also ask where the conference was held?

Mr. HAMMITT. No.

Mr. FISHER. You neglected to ask that?

Mr. HAMMITT. I did; yes, sir.

Mr. FISHER. Were you present in Washington when the negotiations were had with the Ordnance Department?

Mr. HAMMITT. I was not.

Mr. FISHER. You had nothing to do with that at all?

Mr. HAMMITT. Nothing whatever.

Mr. FISHER. You have expressed in your testimony such a tender sympathy for the taxpayers of the country that I would like to ask you to name in the record the employees of your corporation and the subcontractor corporation whose salaries were paid for as a part of the cost of nitrate plant No. 2, which were in excess of $5,000?

Mr. HAMMITT. I shall be very glad to submit such a statement.

Mr. FISHER. I should like to submit to you on page 3065 of hearings before a subcommittee of the war expenditures committee, volume 3, serial 6, parts 50 to 59 and 60 to 64, and ask you to examine that list and state whether or not that is accurate.

The CHAIRMAN. What is the title of that document?

Mr. HAMMITT. These are hearings before Subcommittee No. 5 of the Select Committee on Expenditures in the War Department, of the House of Representatives, Sixty-sixth Congress, second session, and this is volume 3, serial 6, parts 50 to 59 and 64 to 66. My attention has been called to page 3065.

The CHAIRMAN. That identifies the document completely for the record.

Mr. HAMMITT. If you want anything more than my general statement that I assume this is correct, I would like to take that and check up the statement and submit a further statement for the record in regard to it.

Mr. FISHER. That would be entirely all right.

Mr. HAMMITT. I will be glad to do that.

Mr. FISHER. I would like you to state the total amount of the fee that your corporation has received from the United States Government for the construction work at nitrate plant No. 2; how much have you collected to date from the United States Government?

Mr. HAMMITT. Approximately, $1,200,000. I am sure the exact figures are already in the record, because there was a thorough examination on that subject of the Ordnance Department, and that is one of the reasons why I did not think it necessary for me to inform myself as to the exact figures.

Mr. FISHER. That was a percentage of the total amount paid for the expenses of that work; that was a percentage, a cost-plus contract?

Mr. HAMMITT. That was a cost plus a percentage, with a provision for a maximum fee.

Mr. FISHER. You have expressed an opinion that it would be the best thing for the Government to have that plant in a stand-by condition. The contract provides for a sale. Do you understand that if the Government should determine to lease it and not sell it, that the lessees under the terms of the contract, as you construe it, could operate the processes there by paying the stipulated royalties?

Mr. HAMMITT. No; the United States has no authority to grant a license under these patents to a lessee.

Mr. FISHER. Then do I understand that by process of elimination there is nothing, under your interpretation of the contract, that the Government can do with this proposition except first to get an offer and then submit it to you and let you have six months before you do anything about it.

Mr. HAMMITT. Provided the Government decides to dispose of the plant, it would be necessary for it to follow that procedure, and the time we would have to consider it would be, as provided in article 19 of the contract, a reasonable time, not exceeding six months.

Mr. FISHER. Then as I understand it, according to your interpretation of the contract, there is nothing that the Government can do except to sell it?

Mr. HAMMITT. No; the Government can keep it in stand-by condition, which is what we recommend that the Government do. The Government can operate it. The Government can leave it to somebody who has some idea of operation, that does not involve the patents of the American Cyanamid Co.

Mr. WRIGHT. What was your compensation growing out of this contract for the construction of the plant?

Mr. HAMMITT. I received during the period of time that I was engaged on this work for the Air Nitrates Corporation, a compensation of $7,500 a year.

Mr. WRIGHT. You were paid by the Government?

Mr. HAMMITT. I was paid by the Air Nitrates Corporation out of Government funds.

Mr. WRIGHT. Mr. Hammitt, you have been asked a great deal about article 19 of this contract. Boiled down to its last analysis, it means one thing, and that is that the American Cyanamid Co. at the time this construction was contemplated had a monopoly of that industry in the United States, or practically a monopoly?

Mr. HAMMITT. They had an absolute monopoly of the manufacture of cyanamid, and the marketing of cynamid, and manufacture by the cyanamid process.

Mr. WRIGHT. That being true, it was the purpose of article 19 to enable the American Cyanamid Co. to continue that monopoly?

Mr. HAMMITT. Except under the conditions as provided in that article under which the United States may license another purchaser to operate that plant under those patents.

Mr. WRIGHT. You had the privilege of becoming the purchaser upon as favorable terms as anyone else?

Mr. HAMMITT. We did.

Mr. WRIGHT. By accepting the terms of that article you could continue to maintain your monopoly?

Mr. HAMMITT. Yes, sir.

Mr. WRIGHT. The Virginia-Carolina Chemical Co. is engaged in the production of commercial fertilizer?

Mr. HAMMITT. Yes, sir.

Mr. WRIGHT. What percentage of the stock of the American Cyanamid Co. did you say that company owned?

Mr. HAMMITT. Approximately 26 per cent.

Mr. WRIGHT. The Virginia-Carolina Chemical Co. of course is a large customer of the American Cyanamid Co.?

Mr. HAMMITT. Yes, sir.

Mr. WRIGHT. You furnish them with a product that enters into the manufacture of fertilizer?

Mr. HAMMITT. We do.

Mr. WRIGHT. Will you secure and place in the record the names of the gentlemen in the American Cyanamid Co. who own stock in the Virginia-Carolina Co., and state the amount which each one owns.

Mr. HAMMITT. I do not know whether I can get access to the stock lists of the Virginia-Carolina Chemical Co. I can do this: I can make inquiry of all the directors and all the executive officers of the American Cyanamid Co., and I am sure they will all be very glad to inform me what stock they own, if any, in the Virginia-Carolina Chemical Co., and I would be very glad to give you a statement in regard to that.

Mr. WRIGHT. Likewise, can you secure such a list of the stockholders of the Virginia-Carolina Chemical Co., who own stock in the American Cyanamid Co.?

Mr. HAMMITT. I would not like to say for certain that I could, because, of course, I would be asking for information from men who were not my associates in business, and, while I can not conceive of any reason why they should be unwilling to furnish that information, I can not say definitely that I can do that.

Mr. WRIGHT. It is your understanding that it is a fact that some of the stockholders of one company owned stock in the other and vice versa?

Mr. HAMMITT. I think it is possible, just the same as it is entirely possible that some of the stockholders in the American Cyanamid Co. have stock in the Pennsylvania Railroad Co., but there is no corporate connection between the two, other than that which is indicated, which, of course, is a substantial one, namely, that the Virginia-Carolina Chemical Co. itself owns 26 per cent of the stock of the American Cyanamid Co.

Mr. WRIGHT. Mr. Washburn was once president of the Alabama Power Co., was he not?

Mr. HAMMITT. He was; yes, sir.

Mr. WRIGHT. Does he own any stock in the American Cyanamid Co.?

Mr. HAMMITT. That is a question which I thought might be asked, so I made an inquiry about that. He does not.

Mr. WRIGHT. Not in the American Cyanamid Co.?

Mr. HAMMITT. I thought you said the Alabama Power Co. He does own stock in the American Cyanamid Co., but how much I do not know.

Mr. WRIGHT. He has disposed of his stock in the Alabama Power Co.?

Mr. HAMMITT. I understand he has sold all of his holdings in the Alabama Power Co.

Mr. WRIGHT. Do you know how many members or stockholders of the American Cyanamid Co. own stock in the Alabama Power Co. now?

Mr. HAMMITT. I do not; no, sir.

Mr. WRIGHT. Do any of them own stock in it?

Mr. HAMMITT. I am not aware of any that own any stock, except that as I have stated; I assume that Sperling & Co., who marketed some of our securities, also marketed the securities of the Alabama Power Co., and probably still have some interest in securities of the Alabama Power Co., and they may have a very small interest at the present time in the securities of the American Cyanamid Co. Aside from that particular instance, I have no idea whatever of any individual or group which owns stock in the two companies. There is absolutely no corporate connection or joint control or interlocking of any character between the two companies. They are absolutely separate.

Mr. WRIGHT. You spoke about the American Cyanamid Co. owning a large phosphate plant in Florida.

Mr. HAMMITT. They have phosphate mines in Florida.

Mr. WRIGHT. Is that plant operated in the name of the American Cyanamid Co., or in the name of some subsidiary company of the American Cyanamid Co.?

Mr. HAMMITT. Well, it is operated by the American Cyanamid and in its name, but it has obligations to a subsidiary company to deliver to it a certain amount of material in order to supply the contracts that the subsidiary company had entered into before we acquired the subsidiary company.

Mr. WRIGHT. What is the name of the subsidiary company?

Mr. HAMMITT. The Amalgamated Phosphate Co.

Mr. WRIGHT. How is it as to your operations in California, near Los Angeles?

Mr. HAMMITT. Our ownership in the Owl Fumigating Corporation, while I called it a subsidiary company, amount to 50 per cent of the stock of the Owl Fumigating Corporation, but with a provision under which we are enabled to vote 51 per cent of the stock, so, except as to a division of the profits between the American Cyanamid Co. and the other stockholders, we control the Owl Fumigating Corporation, but when it comes to dividing the profits they get half the profits, and the American Cyanamid Co., as the other stockholder, gets the other half.

Mr. WRIGHT. You said the capital stock of the American Cyanamid Co. is $12,000,000 and some odd thousand?

Mr. HAMMITT. Yes, sir.

Mr. WRIGHT. How much was actually paid in, and in what way was it paid in, in cash, or property, or what went in to make up the capitalization?

Mr. HAMMITT. I assume that the preferred stock of the American Cyanamid Co. represents actual cash.

Mr. WRIGHT. What does that amount to?

Mr. HAMMITT. That amounts to approximately half of the $12,000,000.

Mr. WRIGHT. Very well.

Mr. HAMMITT. I assume that the common stock of the American Cyanamid Co. represents a considerable number of intangible assets.

Mr. WRIGHT. Such as patent rights?

Mr. HAMMITT. Largely consisting of such things as patent rights.

Mr. WRIGHT. What is the American Aluminum Co.; where is it located; what does it do; what does it produce?

Mr. HAMMITT. The Aluminum Co. of America is a corporation engaged in the manufacture of aluminum, and it has properties in a number of different parts of the United States.

Mr. WRIGHT. Is there any identity that exists between it and the American Cyanamid Co.?

Mr. HAMMITT. Not the least bit; none whatever.

Mr. WRIGHT. The Alabama Power Co. is financed with Canadian or British capital principally, is it not?

Mr. HAMMITT. I am sure I do not know. I would not like to testify regarding the present financing of the Alabama Power Co. I understand it is the intention of the committee to call representatives of the Alabama Power Co. before it, and they can undoubtedly furnish you with that information.

Mr. WRIGHT. Is it true that the majority of the capital invested in the American Cyanamid Co. is English or Canadian capital?

Mr. HAMMITT. No, sir; it is not true. It is true that probably not more than 10 per cent, or, possibly, as much as 16 or 17 per cent—I have not the exact figures of the stock of the American Cyanamid Co.—is owned in all foreign countries. I have stated to the committee who were the principal stockholders of the American Cyanamid Co., and, of course, it would be quite inconsistent with that fact to indicate any foreign control, because I have told you who the principal stockholders were.

Mr. WRIGHT. I did not know how much of those companies was owned by foreign capital.

Mr. HAMMITT. We know that Mr. James B. Duke, one of the stockholders, is not owned by foreign capital. I am quite certain that the Virginia-Carolina Chemical Co. is a thoroughly American corporation.

Mr. WRIGHT. You do not know how much aid it gets from foreign capital?

Mr. HAMMITT. I have never heard of it getting any. I do not know anything about its financial affairs.

Mr. WRIGHT. You said that the Air Nitrates Corporation was not organized by these 10 gentlemen who have been mentioned here, but it was organized by the American Cyanamid Co. Will you please state just the process that was gone through in the organization of the Air Nitrates Corporation? Where was it chartered, who were the incorporators, or who petitioned the court for a charter? Tell us the details of how it was organized.

Mr. HAMMITT. It was organized under the laws of the State of New York, which provide for the filing of a certificate of incorporation in the State capitol in Albany. The question as to who were the incorporators of that company was a matter of absolute indifference. They could have been officers or they may have been clerks. But they never performed any function except the purely ministerial function of signing their names to the incorporation papers. The stock of the corporation is owned by the American Cyanamid Co. Its charter is undoubtedly on file in the State capitol in Albany, and we undoubtedly have a copy of it, and if the committee would feel better informed by having a copy of it I would be glad to send it to you.

Mr. WRIGHT. It organized after it received its charter, did it not, elected a president and board of directors and other officers?

Mr. HAMMITT. Yes; they elected a president of the company, and the president was Mr. Frank S. Washburn. They elected a number of vice presidents.

Mr. WRIGHT. Who voted the stock in perfecting the organization of the company?

Mr. HAMMITT. I imagine the stock was voted, in perfecting the organization, by a trust officer of some sort, representing the American Cyanamid Co.

Mr. WRIGHT. So the American Cyanamid Co. did all the voting in the organization of that company?

Mr. HAMMITT. Yes.

Mr. WRIGHT. Do you mean to say that the gentlemen acting as officers and directors and shareholders who operated this Air Nitrates Corporation did not own a dollar of stock in it?

Mr. HAMMITT. If it was required under the by-laws to have qualifying stock, then provision was made that the stock should be deposited in their name, and also provision was made that they should never get any benefit from it. All the beneficial interests in any stock of the Air Nitrates Corporation, which, as I have explained to the committee, is not worth anything at all, because it never made any money and never will, is owned by the American Cyanamid Co.

Mr. WRIGHT. Nitrate plant No. 2 at Muscle Shoals cost $67,000,000, did it not?

Mr. HAMMITT. Yes, sir.

Mr. WRIGHT. Have you any idea what its present value is?

Mr. HAMMITT. That is a very intangible thing, because you have to consider what you are figuring its value for. Its present scrap value, delivered to anybody who would take it with the full privilege of breaking it up or doing anything he wanted, and without any obligation whatever, so that he would just scrap it up for scrap value—I suppose its value would be about 10 per cent of the amount of the investment in it. Indeed I will say that certain parts of the chemical plant would have a scrap value that was exceedingly small, but the power plant itself would have a scrap value that is very high, and when you average the cost up I should say then the scrap value would be perhaps 10 per cent. If you consider it as a means of protecting the Government against a future war emergency, then it may be its value is many hundreds of millions of dollars. You can not tell; that is a thing which this committee would have better judgment on than I would have. But if you consider it as a plant to be operated at the present time by the cyanamid process without a subsidy it has not any value at all.

Mr. WRIGHT. There is a steam plant constructed near nitrate plant No. 2 is there not?

Mr. HAMMITT. Yes; it is a part of the plant.

Mr. WRIGHT. Is it adequate to operate the plant?

Mr. HAMMITT. Yes, sir.

Mr. WRIGHT. Do you know what the horsepower produced there is?

Mr. HAMMITT. Its present installation is 60,000 kilowatts, which amounts to 78,000 horsepower, or, roughly, 80,000 horsepower.

Mr. WRIGHT. That is really a part of the plant, and of course the plant would be useless without power?

Mr. HAMMITT. Without that power or some other kind of power. There is a transmission line running to the Muscle Shoals plant from the Alabama Power Co.'s plant on the Warrior River, 88 miles away, and there is this proposed water-power development.

Mr. WRIGHT. If I understand you correctly, the Air Nitrates Corporation has no plan or idea at present of submitting an offer for nitrate plant No. 2?

Mr. HAMMITT. That is true; yes, sir.

Mr. WRIGHT. They have worked out no plan by which there is in prospect a definite offer to be submitted to the Government?

Mr. HAMMITT. That is true.

Mr. WRIGHT. Your whole idea is that the plant ought to be left in a stand-by condition?

Mr. HAMMITT. That is true; yes, sir.

Mr. GARRETT. Mr. Hammitt, you have been asked almost everything, but there is one thing I should like to have you clear up in my mind. I think I understand the situation fairly well now, except one thing, and that is just about the operation of the Muscle Shoals nitrate plant under the proposition Mr. Ford has submitted. As I understand you you say that if it were operated under that proposition it would destroy the American Cyanamid Co.

Mr. HAMMITT. Perhaps the operation of that nitrate plant would not accomplish the complete destruction of the American Cyanamid Co., but it would certainly injure the American Cyanamid Co. very materially by placing upon the market a product of the cyanamid process, whatever the product of that plant should be.

Mr. GARRETT. You are speaking of fertilizer products?

Mr. HAMMITT. Assuming that they were fertilizer products, it would place on the market fertilizer products of the cyanamid process in competition with our product and produce a market on a basis by which the United States Government assists our competitor financially, and that would very materially injure the American Cyanamid Co.

Mr. GARRETT. Is it your opinion, after investigating the Ford proposition, that if the plant should be installed regardless of Government aid or otherwise, it could be so operated that it would materially reduce the price of commercial fertilizer?

Mr. HAMMITT. Not unless it was sold at less than manufacturing cost, because if you produce a considerable quantity of a fertilizer ammoniate it does not make any difference what it costs you to make it, you have to sell it, and the only thing you can get for it is what the market will pay. While undoubtedly that fertilizer operation at Muscle Shoals would net Mr. Ford a very substantial loss, which he would have an opportunity to recoup out of the power end of his proposition, it would also net the ammonia industry a very material loss by dumping this material manufactured under Government subsidy on the market in competition.

Mr. GARRETT. Then, regardless of whatever system of bookkeeping might be employed by Mr. Ford or his company that he is to organize to operate this plant, it is your opinion that he could and would put a commercial fertilizer on the market that would materially reduce the price?

Mr. HAMMITT. I think it is entirely probable that for a certain period of time, at least, he would put a fertilizer material on the market that would have the effect of materially depressing the market for the fertilizer materials we make. Those fertilizer materials occupy so small a part on the farmer's actual fertilizer that I would not like to testify to the effect that it would materially reduce the price of fertilizer.

Mr. GARRETT. What fertilizer materials does your company manufacture that would be produced by the Muscle Shoals operation?

Mr. HAMMITT. Cyanamid.

Mr. GARRETT. What is that in the make-up of fertilizer? What do you call that in the fertilizer? When you speak of the different component parts of fertilizer, what do you call it then?

Mr. HAMMITT. It is in the fertilizer in the form of units of ammonia; that is, the nitrogenous content of the fertilizer?

Mr. GARRETT. That is the nitrogen?

Mr. HAMMITT. Yes, sir.

Mr. GARRETT. The principal parts of the fertilizer are nitrogen, phosphoric acid, and potash?

Mr. HAMMITT. Yes, sir.

Mr. GARRETT. Usually there is about 2 per cent of nitrogen in the average fertilizer, although some of it ranges as high as 4 per cent?

Mr. HAMMITT. Again, I think it would be better to examine the fertilizer manufacturers in connection with that, but my impression is that 2 per cent is not the average now; it is really a little higher than that.

Mr. GARRETT. At least it may run higher; it runs from 2 to 4 per cent, as a rule?

Mr. HAMMITT. Sometimes it runs as high as 10 per cent.

Mr. GARRETT. The information I am trying to get for my own satisfaction as well as for the record is just how the operation of that plant is going to destroy your concern. I can understand how your concern would be very much opposed to it if it was going to do that, and that is the information I am trying to get. Making a long story short, and you have been on the witness stand for wo days, and I know you are tired; I sympahize with you. After you boil this whole thing down, in so far as any money value is concerned, the only real thing of value that the American Cyanamid Co. has now or has ever had in this proposition is the value of the patent rights, is it not?

Mr. HAMMITT. Well, there are a number of things that we contributed besides patent rights.

Mr. GARRETT. I mean when you measure it in dollars and cents. Your contract provides, and you have testified, that the Government was to bear all the expense, and this organization has been so perfected that the Air Nitrates Corporation, which you say is simply a dummy, was to represent and does represent, in fact, the American Cyanamid Co., and the whole purpose of it was that there should never under any sort of circumstances be any financial

charge against the American Cyanamid Co. in the construction of this plant, and it is so stated in the contract.

Mr. HAMMITT. That is one purpose of the creation of the Air Nitrates Corporation.

Mr. GARRETT. When we speak of the Air Nitrates Corporation, it is the same as speaking of the American Cyanamid Co.?

Mr. HAMMITT. That is right.

Mr. GARRETT. So, as a matter of fact, when they went down there, every dollar expended, as provided in the contract, all of the liabilities that might be charged against the Air Nitrate Corporation, were to be borne by the Government of the United States, according to section 10 of the contract, which says that "the United States shall bear all costs and expenses of every character and description." They put that language in there, and it was well drawn, I will say, from the standpoint of the American Cyanamid Co.

Mr. HAMMITT. That is true, to a certain extent. I want to help you to get the record clear, and to make a long story short, and the only respect in which it is not true is that it is provided in the same contract, in Article X, on page 11, as follows: "The agent shall make no charge to the United States for the following things," and those are the things they are to deliver without charge.

Mr. GARRETT. What they furnished without charge were those things mentioned in paragraphs 1, 2, 3, and 4, in Article X, on page 11 of the printed copy of the contract?

Mr. HAMMITT. Yes, sir.

Mr. GARRETT. But that involved no monetary expenditure whatever?

Mr. HAMMITT. Oh, yes; it is a very important monetary expenditure, believe me.

Mr. GARRETT. I mean so far as it is set out here.

Mr. HAMMITT. To deliver over to the Government for a year and a half the servicese of 10 men for their full time, and 10 very expensive men involves monetary expenditure.

Mr. GARRETT. That was supposed to be taken care of out of the million and a half dollar fee, was it not?

Mr. HAMMITT. If it was supposed to be taken care of out of that fee, it was not. But assume it was taken care of out of that fee, that would merely mean that there had been paid back to the Government everything in the way of a fee that had been paid to Air Nitrates Corporation.

Mr. GARRETT. That resolves itself back into the question of taxes, which everybody had to pay.

Mr. HAMMITT. You bet they did.

Mr. GARRETT. What I am trying to bring out was that instead of the Government making this contract with you and paying you these fees, taking a good part of it back in taxes, if it had commandeered this plant, just as it took the boys who went into the Army, and had said it shall not be a matter of whether you hold or withhold those patent rights, which you only get by virtue of the laws enacted by the Government, they could have commandeered the whole thing and put it at Muscle Shoals. The Government could have done that, could it not?

Mr. HAMMITT. I should think the Government's power during war time possibly might have extended to that point.

Mr. GARRETT. Absolutely; but that course was not pursued. It finally comes about that your rights here are these patent rights referred to on page 34. Is not the principal patent right involved in this controversy included in those mentioned on pages 34, 35, and 36, the one that is numbered 1217247, for the process of making ammonium nitrate and other products, dated February 27, 1917? Is not that the principal one that would be involved in the Muscle Shoals proposition?

Mr. HAMMITT. No; I certainly would not say that.

Mr. GARRETT. What would be the principal ones there?

Mr. HAMMITT. All of them.

Mr. GARRETT. This Ford contract says he is to make ammonium nitrate to a certain capacity, or its equivalent, and that is all.

Mr. HAMMITT. Or its equivalent.

Mr. GARRETT. To the amount of 110,000 tons per annum.

Mr. HAMMITT. That is very much like saying a man will make an amount of cloth equal to so many million ladies' hair nets, because the units are not easily transferrable from one to the other.

Mr. GARRETT. I want to get this clear. I see that that patent I referred to a moment ago was granted on February 27, 1917.

Mr. HAMMITT. Yes.

Mr. GARRETT. Who was the patentee in that case, do you recall?

Mr. HAMMITT. I do not.

Mr. GARRETT. Are not all these patents enumerated here the discoveries of some individual chemist who worked out this process, some one in his laboratory, who sold the patent to the American Cyanamid Co., and they paid him for it in common stock; is not that the usual practice?

Mr. HAMMITT. No; I should say that the majority of these patents were developed by employees of the American Cyanamid Co. through a process of research that was directed by the American Cyanamid Co., conducted in its own laboratory, at its own plants, and financed by it.

Mr. GARRETT. Granting that to be true, as a rule these patent rights are the evolution and the product of the brains of an individual worker in the American Cyanamid Co., some fellow who went off in the laboratory and worked out the process, although being paid a nominal salary, or perhaps a good salary, by the American Cyanamid Co.; it does not make any difference about that. Nevertheless these patents were all the development of some man's brain.

Mr. HAMMITT. Of many of them working in combination.

Mr. GARRETT. When he developed it it was patented in his name, and they usually pay a man who develops a process like that in the common stock of the corporation. That is the usual process in this country.

Mr. HAMMITT. Our arrangement was somewhat different from that.

Mr. GARRETT. You have gone over all that question of the construction of the contract, and I do not care to go into that any further. But following a question by Mr. Miller, if, as a matter of fact, you have a good contract, as you contend you have, and if, as a matter of fact, the Government should accept Mr. Ford's proposition, then you would have your royalties for a period of years, until the patents expired, and that would make a very handsome fee, so far as your company is concerned. If, as a matter of fact, Mr. Hammitt, just between ourselves, here across the table, this company should get this proposition, or it should be turned over to Mr. Ford, and that company should make the amount of material called for, and your company should get $1,000,000 a year in royalties, would that not be a very good proposition for your company, and would not your company make as much in that regard as it would possibly lose as a competitor of Mr. Ford in the sale of fertilizer?

Mr. HAMMITT. Congressman, I explained at some length yesterday what our views were as to the possibilities of our collecting that money and what effort would be necessary.

Mr. GARRETT. I am assuming that you will do it; of course, if you do not do it, you have lost that much.

Mr. HAMMITT. We will do it, but it is our business judgment that we have better protection, very much better protection, under the provisions of article 19 of our contract than that protection would be for us, and it is our best judgment that our interests can only be properly protected in that way by which it was agreed in the contract that they should be protected—by carrying out the terms of article 19. That is the reason I have taken up a day and a half of the committee's time.

Mr. GARRETT. I understand that to be your position, but you understand that the law department of the War Department does not hold the same view that you do in regard to that contract, and the question of whether Congress would follow it or follow you is a question yet to be solved. That is for future development; but the point I wanted to get at was on the merits of the case, if that contract should stand and Congress should decide you have a good contract, that section 19 is good, in view of the fact that no other company has made an offer, except two offers that have been made by correspondence which have been sent to Members of Congress, if Congress should decide to accept Mr. Ford's proposition and he should go to work on the plant, if your contract is good, you will collect many millions of dollars from your royalties on account of the operation of that plant.

Mr. HAMMITT. There is no doubt we will have an income from royalties.

Mr. JAMES. Mr. Hughes was called in by your company especially in connection with section 19?

Mr. HAMMITT. In connection with the problem that was worked out in section 19.

Mr. JAMES. That language was either drafted or approved by Mr. Hughes, was it not?

Mr. HAMMITT. I do not believe I can say that Mr. Hughes actually passed upon the language itself, but it was approved about in that form and drafted about in that form on the strength of his advice.

Mr. JAMES. He had not been consulted on any previous contract, had he?

Mr. HAMMITT. Not that I know of.

Mr. JAMES. He was not consulted in reference to the contract of November 16, 1917?

Mr. HAMMITT. To the best of my knowledge I think it is undoubtedly true that he was not so consulted.

Mr. JAMES. That contract entered into on November 16, 1917, was for the construction of nitrate plant No. 2, was it not?

Mr. HAMMITT. It was.

Mr. JAMES. Is that a long contract?

Mr. HAMMITT. Approximately the same length as this one.

Mr. JAMES. Was there any article in that contract that resembled section 19 of this contract?

Mr. HAMMITT. There was, yes, sir. It was not in exactly the same form.

Mr. JAMES. It was not quite strong enough?

Mr. HAMMITT. I think it was not nearly so strong as Article XIX.

Mr. JAMES. But the contract on which you built nitrate plant No. 2 you claim did not have any section 19, but had another section, in the contract dated November 16, 1917, and the nitrate plant No. 2 was constructed under that?

Mr. HAMMITT. No. This contract of June 8, 1918, by its terms supersedes the previous contract, and the greater amount of construction work was done after this contract.

Mr. JAMES. You entered into the contract of November 16, 1917, for the construction of nitrate plant No. 2?

Mr. HAMMITT. That contract does not now exist, because it is superseded by this one.

Mr. JAMES. When you took the original contract with the United States you agreed to do certain things under the contract of November 16, 1917?

Mr. HAMMITT. We started under that contract; yes, sir.

Mr. JAMES. According to the contract here, the reason that was changed was for the best interests of the United States?

Mr. HAMMITT. Yes; it was thought better to have——

Mr. JAMES (interposing). It was not thought to be for the best interests of your company; it was for the best interests of the United States, was it not, because I note that you state on page 4 that the reason given for changing the contract was in accordance with the best interests of the United States.

Mr. HAMMITT. I think it was undoubtedly considered to be in the best interests of the United States to cover the larger operation by a superseding contract rather than by a supplemental one.

Mr. JAMES. The reason given for changing the contract was that it was necessary to contract two additional plants.

Mr. HAMMITT. That was the occasion for writing the new contract.

Mr. JAMES. That was the excuse?

Mr. HAMMITT. That was the occasion; of course, you had to have another contract, either a supplement to this one or something superseding it.

Mr. JAMES. Was the contract signed on June 16, 1918?

Mr. HAMMITT. Was this one?

Mr. JAMES. Yes. I notice it is stated on page 20 that "In witness whereof, the parties hereto have caused these presents to be executed and delivered, in triplicate, at Washington, D. C., the day and year first above written."

Mr. HAMMITT. That is the 8th of June.

Mr. JAMES. 1918?

Mr. HAMMITT. Yes, sir.

Mr. JAMES. Then, tell me why, on page 18, section 21, it is stated that "this article shall not apply to this contract so far as it may be within the operation or exception of section 116 of the act of Congress approved March 4, 1919"?

Mr. HAMMITT. That is a misprint.

Mr. JAMES. What is the correct year?

Mr. HAMMITT. I do not know what the correct year is, but that was a statute then in existence, and this contract was executed on the date it states. That is a mistake of the printer.

Mr. JAMES. Would you mind putting in the record the correct date, and also the exact language of section 116?

Mr. HAMMITT. The date of the act and the exact language of section 116?

Mr. JAMES. Yes.

Mr. HAMMITT. Yes; I will do that.

Mr. JAMES. I notice it states in Article XXI, on page 18, that "No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract." What was the occasion for using such language as that? Nobody in Congress was trying to get any share, or trying to butt in, was he?

Mr. HAMMITT. I think that was the usual provision in all contracts, and it was simply a means of making clear what, I suppose, was always the fact, that there was no Member or Delegate in Congress who was interested, and I take it that there is some general provision of law that requires that. At any rate, that never was called to my attention, and we never thought of that provision.

Mr. JAMES. I would like to have the contract of November 16, 1917, in the record.

The CHAIRMAN. If there is no objection that will be inserted in the record.

(The contract referred to is as follows:)

ORDNANCE DEPARTMENT CONTRACT, UNITED STATES ARMY.

These articles of agreement entered into this 16th day of November, 1917, by and between Air Nitrates Corporation, a corporation organized and existing under the laws of the State of New York, of the first part (hereinafter called the corporation) and the United States of America, by J. W. Joyes, colonel, Ordnance Department, United States Army (hereinafter called the contracting officer), acting by authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, of the second part. Witnesseth:

Whereas the American Cyanamid Co., a corporation of the State of Maine, is the producer of certain chemicals by the so-called cyanamid process, necessary for the production of ammonium nitrate, and is familiar with and controls exclusive patents and processes for the production of such chemicals in this country. The United States plans to have produced ammonium nitrate upon a large scale, and to have created, constructed, and operated a plant for such production. The said company proposes to assist the United States in its plans (1) by licensing the United States and the Air Nitrates Corporation as agent of the United States to use its patents and processes; (2) by placing at the disposal of the Air Nitrates Corporation all its experiences, records, and plans appertaining to the production of the said chemicals; (3) by placing at the disposal of the Air Nitrates Corporation certain members of its executive and technical force; (4) by placing at the disposal of the Air Nitrates Corporation all its plants for the purpose of training superintendents, foremen, and chief operatives. And the United States proposes to compensate the American Cyanamid Co. for so licensing such patents and processes all as set forth in a contract marked "1" bearing even date herewith and annexed hereto. The said company is unwilling to subject its property and assets to liability in connection with the creation, construction, and operation of the plant. Accordingly the said company has organized the Air Nitrates Corporation (the corporation under this agreement) which shall act as the agent of and which shall be solely responsible to the Government in the creation, construction, and operation of the proposed plant and according to the terms hereof, and

Whereas war exists between the United States and Germany, constituting a national emergency,

Now, therefore, under the provisions of section 120 of an act of Congress relating to national defense, approved June 3, 1916, and pursuant to all other laws of the United States and Executive orders of the President of the United States or heads of its departments, under which the requirements of advertising for proposals are dispensed with, and contracts in the form hereof duly authorized,

This contract witnesseth that in consideration of the mutual agreements herein contained, the said parties have agreed, and by these presents do agree, to and with each other as follows, viz:

ARTICLE 1. The corporation will engage exclusively in the creation, construction, and operation of the plant herein described.

ART. 2. The corporation acting as agent for and at the cost of the United States, agrees to plan, create, lay out, construct, erect, and install or cause to be planned, created, laid out, constructed, erected, and installed at Muscle Shoals, Ala., upon land of the United States, to be purchased by the corporation for the United States, all temporary buildings, houses, warehouses, hospitals, stores, commissaries, structures, plant machinery, railway tracks, roundhouses, roads, ways and sewerage, water and lighting systems, and do all grading and purchase locomotives, cars, fixtures, tools, equipment, apparatus, and appurtenances, and shall purchase for the United States and open up, equip, and operate such quarry or quarries as shall be reasonably necessary for the undertaking provided for by this agreement, and shall build or cause to be built and equipped a local power plant for the purpose of furnishing part or all of the requisite power, all hereinafter collectively referred to as the "plant," necessary for the production of approximately 110,000 short tons of ammonium nitrate per annum by the use of the so-called cyanamid process, in accordance with a general plan hereto annexed and made a part hereof, and such changes as may be made from time to time in said plan, such changes to be made with the approval or ratification of the contracting officer. The entire construction of the plant shall be at the cost of the United States, but the corporation shall make no charge to the United States for the items specifically set forth in paragraphs 1, 2, 3, and 4 in article 4 hereof. The United States may make arrangements with others than the corporation for the furnishing, from an outside source, of a portion of the electric power necessary to operate the plant.

ART. 3. The corporation acting as agent for and at the cost of the United States agrees to operate the said plant up to June 1, 1921, or thereafter for as long as the United States shall remain in the present war, and to use its best efforts to begin said operation at the earliest practicable date and whenever the plant is sufficiently advanced to obtain production to begin said operation. The operation of the plant shall be at the cost of the United States, but the corporation shall make no charge to the United States for the items specifically set forth in paragraphs 1, 2, 3, and 4 in article 4 hereof.

ART. 4. The United States will bear the entire cost of the construction and operation of the plant and conducting the business and activities of the corporation, and will supply the corporation with all money necessary therefor in such amounts and in such manner as to allow all of its activities with respect to the construction and operation of the plant to proceed without delays or interruptions and without the necessity of the corporation providing any capital or borrowing any moneys.

The corporation will make no charge to the United States for the following things:

1. For procuring from the American Cyanamid Co. a license to it as agent of the United States to use the said company's patents and processes.

2. For procuring from the American Cyanamid Co. the disposal, for the purposes of the Air Nitrates Corporation, of the said company's experiences, records, and plans appertaining to the production of the said chemicals hereinabove referred to.

3. For procuring from the American Cyanamid Co. the disposal, for the purposes of the Air Nitrates Corporation, of the following members of the said company's executive and technical force, namely, the president, vice president and general manager, superintendent of manufacture, sales and traffic manager, chief technologist, chief engineer, assistant engineer, and in addition thereto, in connection with the operation of the plant, two principal works managers, as such offices may from time to time be filled.

4. For procuring from the American Cyanamid Co. the disposal, for the purposes of the Air Nitrates Corporation, of all of the said company's plants for the purpose of training superintendents, foremen, and chief operatives.

ART. 5. Time being the essence of this agreement, the corporation will (1) organize as soon as practicable such departments as shall be necessary or desirable, including engineering, administrative, purchasing, manufacturing, accounting, and legal departments; (2) procure options upon and purchase for the United States and with moneys supplied by the United States such land as may be necessary or proper for construction, operation, and safeguarding the plant and public and such quarry or quarries as may be necessary or proper for the operation of the plant; (3) engage labor and purchase material, supplies, and the like; (4) use the services of the president, vice president and general manager, engineer assistant to the general manager, superintendent of manufacture, sales and traffic manager, chief technologist, chief engineer, assistant engineer, and in addition thereto, in connection with the operation of the plant, two principal works managers, all of said American Cyanamid Co., as such offices may from time to time be filled; (5) secure the experiences, records, studies, designs, and plans bearing in any way upon the processes necessary for the manufacture of ammonium nitrate which the American Cyanamid Co. now has or which hereafter may be acquired during the term of said contract marked "1"; (6) establish and maintain a main office in the city of New York, N. Y., branch and field offices, and employ advisory, administrative, executive, clerical, and other labor, including managers, superintendents, engineers, chemists, draftsmen, mechanics, and clerical force and laborers; (7) procure machinery, tools, appliances, fixtures, and materials of all sorts; (8) construct and maintain adequate but temporary houses of different and suitable grades for employees and for persons employed by the corporation whose services are reasonably necessary in carrying on its activities under this agreement, for the reasons that there are no housing facilities available at Muscle Shoals, and provide all that may be necessary or desirable by way of sanitation or otherwise for the general welfare of such employees, including infirmaries, hospitals, commissaries, and stores; (9) construct railway tracks, roads, streets, ways, and sewerage, water and lighting systems, and procure locomotives and cars; (10) procure construction equipment, including pumps, derricks, concrete mixers, hoists, shovels, cranes, and the like; (11) enter into contracts for the construction of the plant or for any portions thereof, or for anything in connection therewith.

ART. 6. The corporation in dealing with parties other than the United States shall make all contracts, purchases, and other arrangements for performing this contract in its own name and for its account, and shall not bind or purport to bind the United States, unless the contracting officer shall in writing approve. The corporation shall, unless directed by the contracting officer, insert in every contract made for the construction or operation of the plant, a provision that such contract may be assigned by the corporation, with the consent of the contracting officer, and that such contract relates to the main contract between the corporation and the United States.

All property, including land, paid for or partly paid for by the United States, shall, upon completion of payment, become the property of the United States. The United States may at its option from time to time furnish the corporation with any property for the construction and operation of the plant; provided, however, that the corporation's undertakings for the same made in good faith are not thereby interfered with.

The corporation in operating, caring for, and storing property shall use all reasonable efforts to adequately protect the same, and otherwise shall not be liable for any loss or damage thereto, and the corporation shall be obligated to procure and thereafter maintain only such fire, liability, indemnity, or other insurance in such forms, in such amounts, and for such periods of time as the contracting officer or inspector may approve or require.

The corporation and contractors shall make no departure from the standard rate of wages paid to workmen in the locality where the said work of construction and operation is being done without the prior consent or approval of the contracting officer or the inspector.

ART. 7. The United States shall not be obligated to make any expenditures relating to the performance of this contract unless the approval or ratification of the contracting officer shall have been obtained.

The corporation in the construction and operation of the plant shall abide by such directions of the contracting officer as he shall give the corporation from time to time, and such construction and operation shall be in all respects subject to the approval or ratification of the contracting officer. The corporation, its officers and agents duly appointed by the corporation for the purpose of obtaining such approval or ratification as the case may be, shall from time to time consult with the contracting officer upon the general character of work contemplated or previously done, or previously or about to be contracted for.

The processes and work involved in the manufacture of the final product of ammonium nitrate shall be conducted so that said final product may be in accordance with the Ordnance Department's specifications for such material.

Pay rolls for labor and services performed, invoices for material, invoices for rental, contracts for construction of plant, and payments thereunder shall be furnished to the contracting officer or inspector for approval or ratification. Upon such approval or ratification the contracting officer shall either furnish

funds to the amounts of all of said charges approved or ratified, which shall be immediately paid out by the corporation under the supervision of the contracting officer or his representatives, or may be paid direct by the contracting officer or his representatives to the persons entitled thereto. The United States may make payments for property delivered or services performed under any contracts or subcontracts direct to the contractors or subcontractors.

The contracting officer will from time to time instruct the corporation as to (1) the methods to be followed in reporting cost; (2) the submission of statements thereof, bills therefor, and all other supporting papers; (3) the submission of engineers' and accountants' certificates; and (4) such additions, if any there be, to the allowance of costs and such regulations and instructions with regard to its determination as from time to time shall be adopted by the Chief of Ordnance, or as may be required in order to enable the contracting officer to issue his proper certificate for payment thereof.

Instructions for all purposes under this agreement whenever practicable shall be in writing addressed to the corporation.

ART. 8. As full compensation for the services of the corporation the United States shall make payment to the corporation of the following fees:

(1) Fee No. 1, equivalent to 3½ per cent of the entire cost of the creation and construction of the plant. Payments of such fee shall be made monthly upon the proper certificate of the contracting officer for that portion of the entire cost approved or ratified during the month or months preceding and for which the fee is then unpaid. The total of this fee shall not exceed $1,000,000.

(2) Fee No. 2 is equivalent to one-quarter of 1 cent per pound of ammonium nitrate produced at the plant in accordance with the Ordnance Department's specifications for such material, or accepted by the inspector, from commencement of operation to June 1, 1921, and thereafter for so long as the United States shall remain in the present war. Payment shall be made monthly upon the proper certificate of the contracting officer or inspector showing delivery and acceptance of ammonium nitrate.

ART. 9. Cost upon which fee No. 1 of the corporation is based shall be the entire cost from the 16th day of November, 1917, of creating and constructing the plant approved or ratified by the contracting officer, including, among other items, the following:

(*a*) All the land, including quarry or quarries, labor, material, machinery, fixtures, equipment, apparatus, appurtenances, tools not owned by the workmen, supplies and equipment necessary for either temporary or permanent use for the construction and operation of the plant, including the opening up and operation of quarry or quarries.

(*b*) Rental for construction plant and for the main and branch offices, and for furnishing and equipment for such offices.

(*c*) Loading and unloading construction plant, the transportation thereof, including transportation to and from the place or places where it is to be used in connection with said work, the installation and dismantling thereof, and ordinary repairs and replacements during its use in the said work.

(*d*) Transportation and expenses, including transportation tax to and from the work of the necessary field and office forces, procuring labor, and expediting the production and transportation of material and equipment. All freight charges on equipment, furnishings, material, and supplies, including transportation tax thereon.

(*e*) Salaries of managers, engineers, superintendents, timekeepers, foremen, and other employees at the main and field offices of the corporation in connection with said work, salaries of the executive officers of the corporation, except such as shall be placed at the disposal of the corporation by the American Cyanamid Co., and set forth in contract marked "I."

(*f*) Temporary buildings, houses, warehouses, hospitals, infirmaries, stores, commissaries, and structures, and the equipment required therefor, and furnishings and equipment required for main and field offices, and the cost of maintaining and operating the same, and including such minor expenses as telegrams, telephone service, expressage, postage, etc.

(*g*) Temporary buildings of different grades, warehouses, local power plant, structures, plant machinery, railway tracks, locomotives, cars, roundhouses, roadways, grading and sewerage, water and lighting systems, fixtures mentioned and described in article hereof.

(*h*) All bonds required by this agreement, and all bonds necessary or proper, fire, liability, and other insurance, and such losses and expenses not compensated by insurance or otherwise as are found and certified by the contracting officer to have been actually sustained (including settlements made with the written consent and approval of the contracting officer) by the corporation in connection with said work, and to have clearly resulted from causes other than the fault or neglect of the corporation. Such losses and expenses, when incurred by the corporation in connection with damage to third person resulting from the work, shall be included in the cost of the work, but not for the purpose of determining the corporation's fee; but such losses and expenses, when incurred by the corporation in connection with constructing and replacing any of the work destroyed or damaged, shall be included in the cost of the work for all purposes hereunder.

(*i*) Permit fees, royalties, and other similar items of expense incidental to the execution of this agreement.

(*j*) Transportation, including all transportation tax, traveling and hotel expenses, and telephone, telegraph, mail, and express, expenses of officers, engineers, and other employees of the corporation as are actually incurred in connection with this work.

(*k*) Amounts paid to contractors or subcontractors under contracts approved or ratified by the contracting officer, and sums paid by the United States upon contracts made with any person at the request of the corporation.

(*l*) All manner of expense of the corporation in creating and constructing the plant and its equipment, including administration, superintendence, engineering, materials, labor, freight, transportation tax, power, heat, light, rentals, insurance, liabilities, losses not covered by insurance, and all overhead, general, and legal costs and expense, and including all other items of expenditure made by the corporation not properly chargeable to manufacturing.

(*m*) In addition thereto further allowances, if any there be, of cost from time to time may be made by the contracting officer.

The enumeration of the foregoing items shall not be deemed to be inclusive of all items of cost and shall not be construed to exclude in determining cost and the fee thereon other items of expenditures entering into the cost of creation and construction of the plant and not herein enumerated.

All revenue, if any, from the operation of any housing, boarding houses, commissary, stores, infirmary, hospital, or other facilities, or from rebates, refunds, etc., shall be accounted for by the corporation to the United States.

The United States may itself furnish construction plant, materials, machinery, equipment, or other property for use upon the job; the cost of all such property shall be included in the cost upon which the corporation's fee shall be based.

ART. 10. The contracting officer will detail an inspector to work with the corporation at its main office in New York and an inspector to work with the corporation at its branch office at the site of the plant, which inspectors shall have authority to give approvals, ratifications, and instructions to the corporation hereunder and to receive and transmit to the disbursing officer vouchers prepared by the corporation.

At the request of the corporation the United States may enter into contracts with any person or corporation to perform any of the work in connection with the construction of the plant or for supplying materials, machinery, or equipment therefor, but the sums paid thereon shall be deemed to be a part of the cost of the plant in determining the corporation's fee No. 1.

In the event that the corporation shall deem it for the best interest of the United States in carrying out this agreement, the contracting officer may upon request purchase and pay for direct any work in connection with the construction of the plant and materials, supplies, machinery, and equipment, but the corporation shall prepare such advertisements, specifications, abstracts of proposals, and vouchers for such purchases upon the prescribed Government blanks and present the same to the contracting officer for approval and acceptance, and the contracting officer shall pay the sums set out in such proposals as approved and accepted to the persons making the same. The sums so paid shall be included in the cost of the plant in determining the corporation's fee No. 1.

The contracting officer shall detail a disbursing officer for service at the main office and one for service at the branch office at the site of the plant, with power and sufficient funds to discharge the pay rolls as they become due and to make any other payments as they shall become due on account of this agreement.

ART. 11. It is further agreed that if in the judgment of the contracting officer the oxidation of ammonia and its conversion to dilute nitric acid or the manufacture of ammonium nitrate from dilute nitric acid by interaton with ammonia may be done more advantageously by improvised methods of persons or companies other than the corporation, the contracting officer shall be free to call

upon the corporation to install and use such methods or processes in its operation of the plant at the cost and expense of the United States. The contracting officer shall be free to consult with persons other than the corporation upon all matters relating to the operation of the plant, to the end that the best results of operation may be obtained.

ART. 12. The contracting officer or his representative shall be afforded at all times proper facilities for inspection of the work and shall at all times have access to the premises, to the work and material, and to all books, records, correspondence, instructions, plans, drawings, receipts, vouchers, and memoranda of every description of the corporation pertaining to said work; and the corporation shall preserve for a period of six years after its completion or cessation of work under this contract all of the books, records, and other papers just mentioned. The corporation or its duly authorized representative shall be accorded the privilege of examining the books and papers of the contracting officer relating to the work performed or materials furnished under this contract for the purpose of checking up and verifying the cost of this work.

ART. 13. In the event that in the opinion of the Chief of Ordnance the public interests so require, this contract may be terminated by notice in writing to the corporation without prejudice to any claim the United States may have against the corporation or the corporation may have against the United States. In the event of the termination of this contract as aforesaid the United States shall pay to the corporation all costs and obligations of the corporation arising in connection with the construction or operation of the plant therefor properly incurred, but not previously paid. In addition thereto the United States shall make the following payments under the following conditions:

(1) In the event that this contract is terminated during the construction of the plant, if the corporation is not in default in any substantial agreement herein contained, the United States shall pay the corporation such percentage of the fee No. 1 provided for in article 8 hereof, and not theretofore paid, as may be found by the Chief of Ordnance as fairly and justly amounting to the percentage of the work then performed, including obligations incurred which the contracting officer may approve or ratify, and for which payment has been or will be made.

(2) In the event that the contract is terminated during or prior to the operation of the plant by the corporation, then the corporation shall be paid the sum of money if any then due on account of the production of ammonium nitrate, and the United States shall thereafter continue to pay to the corporation one-quarter of 1 cent per pound for the ammonium nitrate produced therein for the period provided in paragraph 2 of article 8 hereof.

Provided, however, and it is understood and agreed, that this contract shall not be canceled prior to June 1, 1921, or so long as the United States shall remain in the present war, except for the permanent cessation of all activities of the United States in connection with the plant, unless the corporation exhibits such default or negligence as to require that the United States in its best interests should directly construct and operate the plant.

ART. 14. It is understood and agreed that if upon cessation of this war or for any other reason under this agreement the United States determines to cease the construction or operation of the plant and proposes to dispose of the same, the corporation shall be given the first opportunity to purchase the plant and its contiguous property, and that no other propositions for the purchase thereof shall be considered by the United States until the corporation has had a reasonable period of time in which to negotiate a purchase.

ART. 15. This contract shall not, nor shall any right to receive payment or any other interest therein, be transferred or assigned by the corporation to any persons, firms, or companies without the consent of the Secretary of War.

ART. 16. In the event that labor disputes shall arise directly affecting the performance of this contract, and causing, or likely to cause, delay, the corporation may address a written statement thereof to the Chief of Ordnance for transmission to the Secretary of War with the request that such dispute be settled, providing such information shall be within the control of the corporation, as the Secretary of War shall require, and it is stipulated and agreed that the Secretary of War may thereupon settle or cause to be settled such dispute.

ART. 17. This contract, and all subcontracts made in pursuance hereof, is subject to the provisions of the following laws:

1. The naval appropriation act approved March 4, 1917, containing, among other things, the provision quoted below in the President's Executive order dated March 24, 1917.

2. The President's Executive order dated March 24, 1917, which provides as follows:

"Under authority contained in the naval appropriation act approved March 4, 1917 (Public, 64th Cong.), whereby it is provided—

"That in case of national emergency the President is authorized to suspend provisions of law prohibiting more than eight hours of labor in any one day of persons engaged upon work covered by contracts with the United States.

"*Provided further*, That the wages of persons employed upon such contracts shall be computed upon a basic day rate of eight hours' work, with overtime rates to be paid for at not less than time and one-half for all hours' work in excess of eight hours.

"It is hereby ordered that the provisions of the act approved June 19, 1912, limiting the hours of daily service of mechanics and laborers on work under contracts to which the United States is a party are suspended with respect to all contracts for ordnance and ordnance stores and other military supplies and material, contracts for buildings under construction or to be constructed at the arsenals, and contracts for fortifications work during the pending emergency and until further orders.

"This order shall take effect from and after this date.

"WOODROW WILSON.

"The White House, March 24, 1917."

The act of June 19, 1912, referred to in the aforesaid Executive order contains, among other things, the following provisions:

"SEC. 1. That every contract hereafter made to which the United States * * * is a party, and every such contract made for or on behalf of the United States * * * which may require or involve the employment of laborers or mechanics, shall contain a provision that no laborers or mechanics doing any part of the work contemplated by the subcontractor for any part of said work contemplated shall be required or permitted to work more than eight hours in any one calendar day upon such work; and every such contract shall stipulate a penalty for each violation of such provision in such contract of $5 for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than eight hours upon said work * * *."

ART. 18. No Member of or Delegate to Congress, or Resident Commissioner, is or shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this article shall not apply to this contract as far as it may be within the operation or exception of section 116 of the act of Congress approved March 4, 1909 (55 Stats., 1109).

ART. 19. No person or persons shall be employed in the performance of this contract who are undergoing sentences of imprisonment at hard labor which have been imposed by the courts of the several States, Territories, or municipalities having criminal jurisdiction.

ART. 20. Except as this contract shall otherwise provide, any doubts or disputes which may arise as to the meaning of anything in this contract shall be referred to the Chief of Ordnance for determination. If, however, the corporation shall feel aggrieved at any decision of the Chief of Ordnance upon such reference, he shall have the right to submit the same to the Secretary of War.

ART. 21. Notice under this contract shall be deemed to have been sufficiently given to and received by the corporation when mailed in a sealed, postpaid wrapper addressed to Air Nitrates Corporation, at 511 Fifth Avenue, New York, N. Y.

ART. 22. The corporation shall furnish to the United States at cost to the United States, within 10 days after execution and delivery of this agreement, a performance bond in the sum of $250,000, conditioned upon the full and faithful performance of that portion of this contract providing for the construction of the plant by the contractor. Such bond shall be in the form and with sureties satisfactory to the contracting officer.

ART. 23. If necessitated by lack of existing appropriations of public funds applicable to that part of this agreement with respect to the operation of the plant, the United States shall have the right to make and execute, and the corporation shall thereupon execute, a new contract under the same terms and conditions as these presents.

ART. 24. This contract may be executed in any number of counterparts, all of which together shall constitute one original contract. Whenever the term "contracting officer" is used in this contract the same shall be construed to mean the contracting officer executing this agreement, his successor or successors, his

duly authorized agent or agents, or anyone designated by the Chief of Ordnance from time to time to act as contracting officer hereunder.

In witness whereof the party of the first part has caused this contract to be executed by its proper officers thereunto duly authorized, and the United States of America has caused this contract to be executed by the undersigned contracting officer thereunto duly authorized.

AIR NITRATES CORPORATION.
By FRANK S. WASHBURN,
President.
C. M. GRANT,
Secretary.
J. W. JOYES,
Colonel, Ordnance Department, United States Army, Contracting Officer.

Witness:
CLARKE M. ROSECRANTZ.
Attest:
ALFRED H. WHITE.

Mr. PARKER. You say you sold fertilizer material to the Virginia-Carolina Chemical Co. and possibly to other companies. What fertilizer materials did you sell?

Mr. HAMMITT. We sell cyanamid to the Virginia-Carolina Chemical Co.

Mr. PARKER. Do you sell phosphates, too?

Mr. HAMMITT. I am not sure whether they have bought phosphate rock.

Mr. PARKER. I do not mean to them, but to other people.

Mr. HAMMITT. Oh, yes; we sell phosphate rock.

Mr. PARKER. Do you sell phosphates?

Mr. HAMMITT. No, sir.

Mr. PARKER. Do they use the cyanamid as a fertilizer material?

Mr. HAMMITT. Yes, sir.

Mr. PARKER. Right in the fertilizer, as it is?

Mr. HAMMITT. Yes; right in the fertilizer.

Mr. PARKER. What quantity of your product do you sell, and at what price?

Mr. HAMMITT. We have sold, in the largest year, to the American fertilizer industries as much as 40,000 tons, and in 40,000 tons of cyanamid there would be——

Mr. PARKER (interposing). What percentage?

Mr. HAMMITT. You mean the percentage of our total business?

Mr. PARKER. What percentage of cyanamid is nitrogen?

Mr. HAMMITT. There is 25 per cent ammonia; that is the unit we use. That would be 10,000 tons of ammonia. The present price of that form of ammonia is approximately $2.10 per unit, and a unit is 20 pounds, which would mean about 10 cents a pound.

Mr. PARKER. Do you sell carbide?

Mr. HAMMITT. No, sir; we use all the carbide we make for making cyanamid from it.

Mr. PARKER. Do you sell any other product from your factory except cynamid?

Mr. HAMMITT. Yes; we sell cyanide, and we sell hydrocyanic acid gas.

Mr. PARKER. You have got the phosphates already. Take the cyanide and the hydrocyanic acid gas, could those he made at this nitrate plant?

Mr. HAMMITT. You can make your cyanide from the crude cyanamid—it would be necessary to put up another plant for that purpose.

Mr. PARKKER. Cyanide of what?

Mr. HAMMITT. I think our cyanide would probably be called calcium cyanide; for that is a mixture.

Mr. PARKER. Does the hydrocyanic acid gas need another process?

Mr. HAMMITT. That is manufactured from the cyanide. That requires another separate plant. Our entire plant in California is devoted to making hydrocyanic acid gas from cyanide.

Mr. PARKER. Are they complicated plants?

Mr. HAMMITT. Yes; they are both complicated. We make various other forms of ammoniates.

Mr. PARKER. Your principal sale is in cyanamid, is it, or do you sell more ammonia?

Mr. HAMMITT. In normal times our best business is in cyanamid. At the present time our best business in money value is cyanide, but that is because the fertilizer industry is down.

The CHAIRMAN. We are very much obliged to you.

Mr. HAMMITT. I am very much obliged to the committee for a day and a half of courtesy.

The CHAIRMAN. I want to thank you for your kindness in your answers to the questions asked by members of the committee.

(Thereupon the committee took a recess until 2.30 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF MR. CHARLES H. MacDOWELL.

The CHAIRMAN. Mr. MacDowell, will you kindly state your name in full, the positions you occupied for the Government during the war, and your present position.

Mr. MACDOWELL. Charles H. MacDowell; during the war, director of the chemicals division of the War Industries Board, handling all materials of that general character which entered into the chemical and explosive program; president of the National Fertilizer Association; president of the Armour Fertilizer Works, Chicago; president of the Western Society of Engineers; and member of the Federated Engineering Council of Washington.

The CHAIRMAN. Mr. MacDowell, I understand that you are very familiar with the subject of fertilizers, especially. Do you know the Muscle Shoals plant?

Mr. MACDOWELL. I know something of it, as I was reasonably familar with the starting of it and the need for the product.

The CHAIRMAN. Will you kindly state to the committee in your own way what you know about the early life of the Muscle Shoals work.

Mr. MACDOWELL. My own particular specialty in the War Industries Board, aside from directing the general activities which were carried on through some 20 department heads, was the personal handling of the nitrate of soda problems.

We were entirely dependent on Chile for that particular form of ammonia or of nitrogen, I should say, which had the most to do with the development and carrying out of the war program as far as explosives, propelling powders, and many other war needs were concerned. Chile has normally a capacity to manufacture about 3,000,000 tons of nitrate of soda annually. It has a normal stock on hand in plants and at coast of about 600,000 tons.

Prior to our getting into the war Europe had been calling for large quantities of nitrates for the manufacture of their war needs. When I say Europe I mean the allied countries.

Nitrates, which ordinarily had a value of around 7 to 8 shillings a Spanish 100 pounds, had gone up perhaps to 10 or 11 shillings when we entered the war. As we had the long pocketbook some Chileans thought there was a good opportunity to get more, and the price was rapidly advanced to as high as 16 shillings.

In studying how we should handle the matter and get a price within the general pocketbook the plan was developed that it should be handled through an international nitrates committee, and that practically eliminating the details of the machinery there would be one directing power and one real buyer to handle all of the nitrates which we might need.

The situation was a difficult one. The Germans for a time had a fleet on that side of the Pacific. We were short of tonnage and we had many problems to solve. We did solve them. We were scared a good many times, but we wiggled through. We traded nitrates around from plant to plant and took them from fertilizer people, borrowed them, and took them in other ways, and we kept every war activity fully supplied with nitrates during that critical period.

However, the Government felt that it was necessary to have other supplies beyond those that naturally existed in this country. We were geting a pretty fair tonnage of ammonia from the by-product coke and gas oven people, but it was thought in the best interest that we should prepare and build as rapidly as possible certain plants for the fixation of nitrogen for whatever purpose we might make use of it.

Two plants were started at or near Muscle Shoals. One of them was based on some experimental work which had been done by a company here in attempt-

ing to solve what is known as the Haber method of uniting the two gases which Germany had developed prior to the war and which was serving her purposes wonderfully.

The other method which was adopted was one which was carried on successfully in Europe and in this country known as the cyanamid process for fixing nitrogen. That particular plant was located at Muscle Shoals and was planned to have a capacity of 110,000 tons or thereabouts of ammonium nitrate, one of the high explosives.

There are several ways, I might say, of making ammonium nitrate. One of them is a method of taking the weak nitric acids made in making dynamite and other nitrating things and passing ammonia gas through it, and then crystallizing out the product. That is the ordinary peace-time method of making it for what are known as permissible explosives.

The second plan, and the one which was used most largely in the allied countries, as they had no nitrogen fixation plants, was to take sulphate of ammonia and nitrate of soda and mix them together in solution, and there was a swap there of the ingredients, and out of it came ammonium nitrate.

Our Government built a plant at Perryville, Md., which, if I remember correctly, had a capacity of about 300 tons a day of that material.

During 1918 we imported from Chile 1,800,000 tons, odd, of nitrate of soda. We would have gone beyond 2,000,000 tons had the war continued. Our military plans for 1919 required that we bring in two million and some odd thousand tons of nitrate for the war program alone, plus all of the production of Muscle Shoals and plus the ammonia which was recovered by the by-products plants. So it was a very big and a very difficult problem.

In addition to that, we use in this country in making sulphuric acid, which is also a component of the explosives, something like 90,000 tons of nitrate of soda. We normally use about 160,000 tons in making blasting powders and explosives of that particular type. In addition, normally, the fertilizer industry used about 300,000 tons of nitrate of soda through the regular channels of the industry, and the farmers were buying as much as about 100,000 tons, so that our use of that particular commodity was approximately, in the fertilizer industry and in the farm needs for it as such, about 400,000 tons.

The CHAIRMAN. At about this time you are speaking of, Germany had been swept off the seas and there was no danger in bringing the nitrates from Chile to this country.

Mr. MACDOWELL. Yes; that danger was eliminated. The greatest trouble we had was in getting bottoms to bring it in. During the winter of 1917–18, if you will recall, we had a very severe winter and we had to take boats and transport coal and other things with them, and, further, we were needing our transportation for shipments to Europe.

We were at one time within four weeks of exhausting our nitrate supply, but we sat down very hard on the Shipping Board and a change took place and we got, as I recall, as high as 390,000 tons of nitrates out of Chile in one month. So we got that fixed up and we got along pretty well.

We had to divert nitrates to France on account of losses there which got in the way of our distribution here, and we had a good many dramatic problems to solve, but we did get by and without one day's loss so far as nitrate of soda was concerned. That is about all I know of Muscle Shoals; just the general need for the development of nitrogen fixation capacity here to supplement what we could get from other sources.

The CHAIRMAN. The act of 1916, the national defense act, had a provision, as you know, section 124, for the fixation of nitrogen at a plant to be constructed in the United States.

Mr. MACDOWELL. Yes, sir.

The CHAIRMAN. Do you know whether the object to be attained by that enactment was intended to protect this country in case we lost control of the seas and had to depend on ourselves for this nitrate?

Mr. MACDOWELL. Unquestionably.

The CHAIRMAN. That was the purpose very largely, you think?

Mr. MACDOWELL. Yes; to as near as possible provide ourselves at home with this very essential chemical for both military and agricultural purposes.

The CHAIRMAN. That is the way Germany supplied herself during the war?

Mr. MACDOWELL. Yes.

The CHAIRMAN. Germany having been cut off from the Chilean supply by hostile fleets.

Mr. MACDOWELL. Yes. One of the main foundations, undoubtedly, of Germany's entry into the war at the time was the fact that she was fortified by what she thought at that time was a large production or ability to produce some of her essential explosives.

The CHAIRMAN. In the use of the nitrates made at Muscle Shoals, was the matter of the fertilizer or the use in fertilizing of the commodity to be produced at that point taken into consideration?

Mr. MACDOWELL. In the general public discussion of nitrogen fixation which was started, if you will recall, in 1916, the fact that cannon and plants ate the same food was emphasized, and the thought was put out that if we should develop our ability to produce this necessary chemical in this country we would have both a war-time and a peace-time need for the product.

The CHAIRMAN. But, as I recall now, the use of the product for explosives was considered of vital importance at that time.

Mr. MACDOWELL. That was the national defense feature of it, and was, of course, the largest influence or the greatest influence in reaching that general decision.

The CHAIRMAN. Regarding fertilizer, this product of the nitrate plants is not in itself a fertilizer, is it?

Mr. MACDOWELL. It can be used in itself as a fertilizer to supply the nitrogen feature of agriculture; yes.

The CHAIRMAN. Is it not one of the component parts of the fertilizer?

Mr. MACDOWELL. As we understand the fertilizer business, it is one of the several essential chemicals or plant foods that go to make the finished fertilizer which is most largely used by the farmers of the country.

The CHAIRMAN. You are familiar with the plant at Muscle Shoals?

Mr. MACDOWELL. Reasonably so. I have not seen it but I am reasonably familiar with it; yes.

The CHAIRMAN. Do you believe that the Government could sell outright the nitrate plant No. 2 to a man like Ford, selling it at a comparatively small amount of what it cost and help the farmers of this country by using the products of that nitrate plant for making fertilizer?

Mr. MACDOWELL. In answer to that I will say that until the farmer uses materially greater quantities of nitrogen in the forms which would be made down there, there is no need for that product for agriculture in this country. As the farmer uses more nitrogen, if the normal sources of supply do not increase in proportion to his increased demand, there will come a time when that product will be needed, but at the moment, no; and as far as I can foresee for some years, no. I am speaking now from the production and from the demand standpoint.

The CHAIRMAN. Then do you believe that the conditions are such in this country that a man like Henry Ford would be justified in asking a 100-year lease or the sale of that property on conditions that in the 100 years subsequent to the signing of the agreement, he would require probably 15 or 20 years, before he could begin to sell that nitrate for fertilizer?

Mr. MACDOWELL. I could not say how long it would take, but it is a number of years ahead before there would be a demand for it; that is, the nitrogen part of it.

The CHAIRMAN. So that Mr. Ford, being looked upon as a shrewd business man, probably, would be justified in asking for a long lease or the sale of that nitrate plant, and then a long lease of the leased portion of Muscle Shoals?

Mr. MACDOWELL. He naturally would want to get as long a lease as he could, but from the standpoint of the production of nitrogen at that plant, under the cyanamid process, I am of the opinion that within five years that process will be obsolete and that therefore that particular plant will not at that time be nearly as efficient in the production of nitrogen, if we get beyond the by-product production, as other methods, one of which is already operating in this country.

The CHAIRMAN. Do you think that the cyanamid process will be obsolete in about five years?

Mr. MACDOWELL. I think so, as far as the production of nitrogen is concerned for fertilizer purposes. It has other uses, of course.

The CHAIRMAN. Of course, the manufacture of these various products has been rather limited in point of time.

Mr. MACDOWELL. Oh, yes.

The CHAIRMAN. How long, if you know, has the cyanamid process been used by the world?

Mr. MACDOWELL. I am not accurate in my memory, but I would say about 15 years.

The CHAIRMAN. And we got into the World War, or at least, the World War broke out in 1914, eight years ago?

Mr. MACDOWELL. Yes.

The CHAIRMAN. Germany at that time was producing cyanamid.

Mr. MACDOWELL. Yes; in a limited way.

The CHAIRMAN. So that she was probably ahead of the rest of the world. We had some discussion of it in Congress along in 1912 or 1913.

Mr. MACDOWELL. Yes.

The CHAIRMAN. But we did practically nothing about it. I think there was a plant installed at Niagara Falls.

Mr. MACDOWELL. Yes.

The CHAIRMAN But the amount of production was not very great.

Mr. MACDOWELL. That was experimental and following certain other methods than the one used by the cyanamid company.

The CHAIRMAN. Now, you believe that progress has been made with regard to the products of the nitrate plants that enables the world, or will enable the world in a comparatively short time, to set aside those products and employ an entirely new method with regard to the making of the material that goes into the fertilizer.

Mr. MACDOWELL. I will say this: I think from all I know and have read that the Haber method and the Claude method, which is a French development, will enable nitrogen compounds to be produced much more efficiently than under the main-strength method, as you might say, which is used for making it by the cyanamid process. I think that is the general feeling of the scientists of the world, that the greatest progress is coming in that direction, and it is for that reason I say that I think inside of possibly five years this method will probably be called obsolete, because it takes at Muscle Shoals 100,000 horsepower continuously to make 110,000 tons of ammonium nitrate, whereas under the Haber process 20,000 horespower would be used; and, as I understand it, under the Claude process 10,000 horsepower would be used, and it does not seem to me that it is the economical and sound thing to use 90,000 additional horsepower in any locality, when power can be so well used for other purposes, to make a product which can be made by the expenditure of 10,000 horsepower.

The CHAIRMAN. I understand that in the use of the cyanamid process you have got to have a very high horsepower.

Mr. MACDOWELL. Yes. Further, the raw materials are large in tonnage. A great deal of special work has to be done beyond the method used in making the product through the Haber gas plan.

The CHAIRMAN. Do they require so much horsepower for the Haber process?

Mr. MACDOWELL. Only about one-fifth, and with the improved one-tenth of the horsepower which is required for the cyanamid process.

The CHAIRMAN. What do you mean by "the improved"; do you mean the French process?

Mr. MACDOWELL. Yes; the French Claude process, which is not yet out of the woods, but apparently very close to it.

Mr. HULL. Mr. MacDowell, you say you are connected with the National Fertilizer Co.?

Mr. MACDOWELL. The National Fertilizer Association.

Mr. HULL. What is that association?

Mr. MACDOWELL. That is an association comprised of most of the people engaged in the fertilizer industry.

Mr. HULL. What is the purpose of it?

Mr. MACDOWELL. The purpose is for the improvement generally of the fertilizer industry. It maintains a large organization for the dissemination of scientific knowledge to the farmers. It works closely in that connection with the Department of Agriculture here and with the various State experiment stations. It has agronomists and men skilled in the dissemination of information which the various farm experiment station people get out, and it publishes their results. It also maintains a fellowship or several fellowships at the different agricultural colleges to solve certain problems in connection with the fertilizer industry, such as the best way to distribute fertilizers, the best strengths to be used, and where to place the fertilizer in relation to the roots of the crops, so that the makers of agricultural implements may devise distributing machinery to carry that out. It also maintains a chemical section that is studying the problems which have to do with the business methods of analyses and with problems of that sort. It maintains an insurance section to study and look after the interests of such members as may want to have their insurance handled through a committee that understands insurance, so that economies may be effected in the carrying out of matters of that sort. It also looks after the general transportation factors and features in the distribution of fertilizers, keeps in touch with the railroad authorities—and did here all during the war—to endeavor to get cars at the different sections where materials are accumulated and at plants where finished fertilizers are shipped, so that the distribution may be made effectively and promptly. It has other interests of that sort.

Mr. HULL. Does it in any way have anything to do with the price?

Mr. MACDOWELL. It has nothing to do with prices.

Mr. HULL. It has no agreements as to the prices?

Mr. MACDOWELL. Absolutely none; and has no features slanting at all in that particular direction.

Mr. HULL. Are they the authors of what might be called this propaganda that is being sent to Members of Congress in regard to the Muscle Shoals proposition?

Mr. MACDOWELL. Over its name.

Mr. HULL. Who finances it?

Mr. MACDOWELL. The fertilizer association.

Mr. HULL. And that includes all the members of the association?

Mr. MACDOWELL. Yes.

Mr. HULL. And that includes practically all the fertilizer manufacturers?

Mr. MACDOWELL. Yes.

Mr. HULL. Do they make any nitrates themselves?

Mr. MACDOWELL. Practically none in this form. A good many of the members take waste materials, such as leather scraps and hair and old felt hats and occasionally an old silk hat, and old shoes and all materials containing nitrogen, and treat those chemically and make that particular form of nitrogen.

Mr. HULL. They also make some nitrogen out of blood?

Mr. MACDOWELL. Yes; blood and tankage and materials of that sort. They also take waste sugar molasses from the beet-sugar manufacturers and treat that. They take the garbage tankage and other waste materials which come from the farm and which they think it is sound to send back to the farm to make these various nitrogenous materials. They also buy cottonseed meal, especially during years when there is off meal, and they use at times quite large tonnages of cottonseed meal. They also buy nitrate of soda. They are very large users of sulphate of ammonia. They buy some cyanamid, and they get everything they can which will fit into the fabrication of fertilizers.

Mr. HULL. They are purchasers, then, of nitrates?

Mr. MACDOWELL. They are purchasers of nitrates, broadly speaking; yes. There is a very small production of ammonium sulphate through the burning of bone for the making of boneblack for sugar refining, but that would only amount to a few tons a year.

Mr. HULL. They are opposed to the Government making this Ford contract, are they?

Mr. MACDOWELL. They are not in favor of the Government making this Ford contract. They are, however, in favor of the development of the water power at Muscle Shoals.

Mr. HULL. Why are they opposed to the Government accepting the Ford proposition?

Mr. MACDOWELL. For two reasons: One reason is a public-policy reason, where they think it is questionable public policy to provide facilities and overfacilities at a water power for one man to monopolize for 100 years. They do not think it is wise public policy to give one man the power to say to a community what kind of industry shall be located in that particular section of the country. That is their opposition to it from that standpoint.

Naturally, an industry which is as large as the fertilizer industry, which is as important to the successful getting along of so many sections of the country, is interested in its investments and in its stable future. Further—and this is the main reason I am here—there has been so much said about the need for fertilizers and cheaper fertilizers that I thought it was wise to let you gentlemen know something about the fertilizer situation as it is; whether there be need for additional products before there is need for it; whether the situation, broadly speaking, warrants this investment based on the fact or on the statement that we need to put in the water power to make fertilizer; and, further, I thought I might be informative, personally, to the committee, in connection with this general subject, owing to my rather intimate knowledge of it over a good many years.

Mr. HULL. According to your statement, it would cost at Muscle Shoals $68 a ton to produce this product, which is now being sold at $48 a ton.

Mr. MACDOWELL. Yes; around there. I think it is now about $50 a ton.

Mr. HULL. If that is the case, there would not be any danger at all of Henry Ford upsetting the industry?

Mr. MACDOWELL. Not from the supply standpoint, as the fertilizer industry buys this material. There is always, naturally, a disturbance when large excesses of materials are thrown on the market. To-day the United States has a surplus of sulphate of ammonia recovered through the normal channels. There is always an upsetting when anything anywhere near as large as this proposal is started, very naturally. Whether it be a revolution or an evolution, of course, depends on time; but there always is an upsetting condition which arises from anything of this sort, and naturally the fertilizer people who have very large investments consider those things, and they may very naturally be worried about such matters. That is a natural reaction, and there is no use not being frank about it.

Mr. HULL. Then, really, what you are worried about is that he might produce fertilizer or nitrates down there for a good deal less than $68?

Mr. MACDOWELL. No; I am not worried about that feature, because there are certain factors which would prevent the cheap manufacture of nitrates at that plant. They may get way below $58, or whatever the price is, but I want to tell you, gentlemen, if you will permit, how sulphate of ammonia is made to-day, so you may get some idea of the cost side of the products which must compete with the Muscle Shoals production. Coal contains nitrogen, ranging broadly from eight-tenths of 1 per cent up to 1½ per cent of nitrogen. That is a constituent of coal. When it goes to a by-product coke plant or when it goes to the city gas plant and is put into the retorts or ovens to be coked a gas is formed. Those temperatures are too high to recover all of the ammonia in that gas, but it goes along with the gas. It must be taken out of the gas, as it is deleterious to the gas, and it is recovered by the simple expedient of passing it through a shower or a bath of sulphuric acid or dissolving it in ordinary everyday water.

If coal costs $6 a ton at the coking plant and figuring that there is 500 pounds of ammonia in a ton of sulphate of ammonia, which is a fact, the material cost of the 500 pounds of ammonia, with coal at $6 a ton, would be $1.50 for the ammonia which goes into that ton of sulphate of ammonia.

At Muscle Shoals with the cyanamid process, in order to reach that point where the gas maker and the coke maker absorbs it, they have got to go to the quarry and quarry lime. They have got to ship it to Muscle Shoals at a transportation cost. They have got to burn that lime at Muscle Shoals. They have got to get coke either by coking or by buying coke, transporting the coke to Muscle Shoals and grinding it. They have got to mix those two together and put them in an electric furnace and treat that material to make carbide of calcium. They have got to make liquid air. They distill off the nitrogen from the liquid air. They take the carbide and put it in small containers, heat it up again, pass the nitrogen through, and when it is absorbed that product is known as crude cyanamid. They then take that product and put it in big steel pressure tanks and use a caustic solution and make steam and boil it or treat it in order to get the ammonia off of the cyanamid to reach the point where the by-product coke oven gets it with practically no cost.

Beyond that point the costs are practically identically the same as between the Muscle Shoals method and the method which is adopted by the coke people.

Now, in 1914, our production of all kinds of ammonia from gas ovens and by-products ovens was around 200,000 tons. We use a lot of this ammonia for making anhydrous ammonia for refrigeration. That is one of the main elements used in refrigeration. We use it in chemical processes for assembling soda ash and for doing other things. We also use it occasionally at home in the old, familiar household ammonia. They make other chemicals with it. The portion which they do not dispose of in that way they fix in sulphuric acid and dispose of it as sulphate of ammonia, which is a fertilizer product.

In 1913 and 1914 we were importing around 90,000 tons of sulphate of ammonia. During the whole war period our production increased. Instead of wasting these valuable products in the old beehive ovens, we are gradually, and rather rapidly, installing these by-products coke plants, and also installing more coal plants for making gas in the cities.

As a result of this entire war development, hastened and encouraged by the Government advances to people to make more metallurgical coke and domestic coke during the war, our capacity increased during that period to approximately 550,000 tons equivalent of sulphate of ammonia. It is not all used in that way, only a part of it being used in that way.

In 1919, which was a pretty good fertilizer year, although materials were a little scarce, Dr. Whitney states we exported something like 130,000 tons of sulphate of ammonia. In 1920 I am unable to get the accurate figures. In 1921 we exported 102,000 tons, and we did not send any to Cuba, and Cuba, normally, under sugar, uses about 35,000 to 40,000 tons.

In 1920 we had the biggest fertilizer year on record. As near as we can ascertain, the fertilizer people themselves used about 135,000 tons of sulphate of ammonia. In other words, they are only using about one-half of the total which goes out of the country.

Now, in addition to that, there is some direct form of sulphate of ammonia used by farmers and truckers I can not give you any figures on that, because I do not know them; but I do know that under normal conditions to-day there is an exportable surplus, if we were running our coke plants to 90 per cent of capacity, of somewhere between 150,000 and 200,000 tons of sulphate of ammonia.

Now, the fertilizer people naturally do not think that the farmers use as much nitrogen as they should. On the other hand, many of the agricultural authorities, and rightly too, are saying that we should go still further in the use of clovers, cowpeas, and those various legumes to get organic matter into our soil before we reach the stage when it would be profitable for them to buy nitrogen in the commercial form; and if you gentlemen will talk with your various experiment-station people you will find that in many sections of the country they so advise.

During the war, there developed in Germany a capacity to produce 2,500,000 tons of sulphate of ammonia. England has a normal exportable surplus of 350,000 tons. Chile has a manufacturing capacity of 3,000,000 tons. The production at Muscle Shoals or the production of more sulphate of ammonia in the coke oven plants will not do away with a our large importations of nitrate of soda from Chile. Nitrate of soda in efficiency as a fertilizer stands at 100 per cent as against 90 per cent for sulphate of ammonia. It is a very quick, predigested form and it is extremely valuable in the trucking sections where they want to get into the markets and capture as much of the high prices for potatoes and other products as they can. It is very desirable in certain sandy soils and certain soils where there is not organic matter. It is largely used in the manufacture of blasting powder and in other ways, and I feel sure in saying to you gentlemen that we will not only continue to use nitrate of soda from Chile, but that we will increase our purchases as the years go on; and after all, it is their dollar to buy our products in this country.

Mr. HULL. These coal-tar products or products of the coke ovens are by-products of the steel industry, are they not?

Mr. MACDOWELL. No; not necessarily. It is a by-product of the industries which provide metallurgical coke for the steel and other people and domestic coke for burning in place of anthracite and for other purposes, and that domestic feature is increasing all the time. Further, we are developing in this country what are known as low-temperature methods of coking coal to make an anthracite substitute. We have one large plant in West Virginia now. I think it is around Fairmont, although I do not recall for sure. In that method of coking you get much larger recoveries of ammonia and other products than you do with the higher temperature methods used by the by-products coke people for metallurgical purposes. You get out of a ton of coal for metallurgical purposes somewhere between 16 and 20 pounds of sulphate of ammonia per ton, which means somewhere around 4 to 5 pounds of the real ammonia per ton of coal coked.

Mr. HULL. In any case it is simply a by-product.

Mr. MACDOWELL. It is a by-product, yes. It is a credit to the cost of making coke.

Mr. HULL. And the price at which you sold it would not affect the production very much.

Mr. MACDOWELL. It would not affect the production at all.

Mr. HULL. It would be produced in any case, depending upon how much you produced the principal article.

Mr. MACDOWELL. Yes; and if it sold for less it would shove up the cost of coke or benzol or tar or creosote or the 55,000 different things that come out of that particular thing.

Mr. HULL. The great body of fertilizer people, or a great many of the fertilizer people, are not producers at all of ammonium sulphate, are they?

Mr. MACDOWELL. Practically none.

Mr. HULL. Then would they not be benefited to some extent if the product was cheapened?

Mr. MACDOWELL. Yes, naturally; but as we already have a big surplus and as we have gotten away with that surplus pretty successfully, because England was not coking coal and Germany was not prepared to compete around the world, even though we have had to come down to $2 per 100 pounds and even less for the product, yet as those countries come into the market, we are going to have increasing difficulty in disposing of the surplus sulphate of ammonia around the world. The point I am making is that it does not matter to the fertilizer people, providing there are reasonably stable conditions, because their materials have to be bought a long time ahead. It does not matter to them, from a nitrogen-production standpoint, because they are buyers, but that does not do away with the question which comes up: Is it good sense to waste coal and transportation and power which could be better used in other directions to make something which is already, and for some time apparently, is overproduced in this country? That is the attitude of the fertilizer people from that standpoint.

Mr. HULL. Perhaps—I do not quite catch the point—but it seems to me as though the fertilizer people were worrying for fear Henry Ford would break up on this proposition; is that the point?

Mr. MACDOWELL. Will break up?

Mr. HULL. Yes; that he will go broke on this proposition.

Mr. MACDOWELL. Oh, no; we are not worrying about Henry, and he is abundantly able to take care of himself, and if he wants to get into the fertilizer game he can do it. He does not have to have Muscle Shoals to get into the fertilizer game. If he thinks it is something he wants to tackle he can get into it without that, and do it very much better, as a matter of fact. We can not dispute his right to do that.

Mr. HULL. Is it because you are afraid of his making a bad bargain?

Mr. MACDOWELL. I am not afraid of his making a bad bargain and did not appear here from that standpoint at all. I thought that the committee might be interested in having me tell them plainly the ammoniates or nitrogen situation, because you gentlemen are asked to do something based on the proposition that there is need for certain fertilizer materials, and we say that for the time there is no such need.

Now, Mr. Swann was here. I am the Mr. MacDowell that Mr. Swann referred to as having gotten him started in this particular research which he has been doing down at Anniston, Ala.

We wanted some phosphorus during the war and he had a large part of the equipment necessary to make it, and we thought, as we were having difficulty in getting it from Niagara Falls and Canada, that the Government might be able to get facilities for making phosphorus there very much cheaper than anywhere else. At that time he had this equipment, which was not being used, and I asked him if he would not like to experiment to see if he could not make some potash, which we needed in agriculture, and also suggested that he might work further on some phosphate volatilization, which I knew something about, because I had done a little something on it myself. He has done splendid work. He has gotten up to about 80 per cent recovery. The fertilizer industry in the acid method recover about 95 per cent. His statements with regard to concentrated fertilizers and the economy of shipping them, however, do not accord with the development of the art as the scientists and as the farmers understand it to-day.

A good deal of the fertilizer which is used is distributed in grain drills and in close proximity to the grain. We know from practical experience and from tests that you can not go beyond a certain concentration or you injure the germinating power of the seed. We know further from work which Dr. Shriner, of the Department of Agriculture, has been doing for some time, and from other sources, that plants require balanced rations, that certain plants require excess ammonia or excess phosphoric acid or excess potash. We are finding out a whole lot about that.

Now, we do not think it is good sense simply because you can ship concentrated stuff to give the plants something which may give them the bellyache, so far as phosphoric acid is concerned, because they do not need anywhere near that quantity of material.

Now, the fertilizer industry has adopted this plan or policy, and that is that it is the business of the agricultural experiment stations and the United States Government experiment station to tell them what formulas and what strengths are best adapted for the different soils or for the different kinds of crops to be grown in the different localities. In other words, it is their business to do that, and it is our business to make fertilizers to match as nearly as we can those instructions which they put out.

Now, when we speak of 2–8–2 and 3–9–3, they are pretty fair fertilizers. There are large tonnages of fertilizers put out for trucking and for crops that run 10 per cent ammonia and 8 per cent available phosphoric acid and 5 per cent potash, and some of them run as high as 15 per cent potash. We want to concentrate. We are advising the farmer all the time to use as strong a mixture as he can. That is our belief. It is economy, and the fertilizer industry is vitally interested in getting cheaper ferilizers to the farmer. The farmer is the only man that the fertilizer industry sells. His interest is the fertilizer industry's interest. They must do everything they can to cheapen the cost of getting plant food to the farm. It would be a foolish industry if it did not work in that way. It is experimenting, and it wants the power to use processes or the right to use processes perfecting the art or anything which has to do with decreasing the cost of making fertilizer. If Mr. Swann works out his process or if somebody else works out a process which will cheapen the cost of making fertilizer, the industry or some component part of the industry wants the right, if he will give it under a royalty, to use those things.

It would not feel happy, I will admit, if Mr. Ford had secondary power which cost him $5.20 per horsepower per year, as Mr. Cooper suggested the other day, and not be able to get somewhere near the same line of cost in order to supply a certain part of the territory or certain sections of the country. In other words, the fertilizer industry feels that the Government, if it puts in that power plant, should make it available, as far as cost is concerned, to different people who may want to go down in that locality and perform any function which is beneficial to the country.

I am speaking very frankly, gentlemen, because I want you to know how those I have talked with feel about it in regard to the industry.

Mr. HULL. Of course we want to get all the information we can, and while perhaps some of these questions may seem a little personal, yet it is because we want to get the different angles to this matter.

Mr. MACDOWELL. Yes; that is right.

Mr. HULL. Now, the amount of fertilizer that a farmer uses depends upon the soil he has, largely, does it not?

Mr. MACDOWELL. No; not necessarily. It depends primarily upon the crop he is growing, plus the condition of his soil. For cereals, for instance, you do not begin to use the tonnage of fertilizer you would under cotton, or more particularly under the various truck crops which are grown in sandy soils.

Mr. HULL. There are certain soils that require practically no fertilizer, although I do not say there is any soil but what would be improved by the use of it.

Mr. MACDOWELL. Oh, yes.

Mr. HULL. Out in Iowa, for instance, we have used very little fertilizer.

Mr. MACDOWELL. Yes; but you are doing some good work at your experiment station there.

Mr. HULL. And yet we are the first State in the Union in the production of agricultural crops, but that is due to the soil.

Mr. MACDOWELL. Yes.

Mr. HULL. And I presume that even in Iowa we have found that we have got to go to the use of fertilizer.

Mr. MACDOWELL. Yes; in maturing your corn early and to get away from soft corn.

Mr. HULL. And the question all comes back to this main point; if you make the fertilizer cheap enough, you would increase the production very materially; is not that true?

Mr. MACDOWELL. If you will use fertilizers more extensively, you will increase the acre production very materially and cheapen the cost of growing a bushel of wheat or a bushel of potatoes.

Mr. HULL. The only limitation to that is the consumption of food products.

Mr. MACDOWELL. Yes; if you want to tackle it from that angle. The fertilizer industry does not think it would be good sense for the United States, for instance, to materially increase its production of wheat, but it might be good

sense for it to grow the wheat it does produce on fewer acres to make it cost them less per bushel, so they would have a greater spread between the market and what it cost them.

Mr. HULL. I would not want to get into an argument about that with you, because I do not agree with you at all on that proposition and I have had some experience. I do not think there is any such thing as overproduction.

Mr. MACDOWELL. I will admit from the economic standpoint that is true.

Mr. HULL. Not in the present state of the world.

Mr. MACDOWELL. I will admit that theoretically you are right on that, but what I mean is, broadly speaking, we have 300,000,000 bushels of wheat for export now, and we are having difficulty in selling it, and it would not be wise for us to go ahead and increase that to 500,000,000 bushels simply because we could produce it.

Mr. HULL. Of course, by decreasing production we might increase the price, but to me that is contemptible.

Mr. MACDOWELL. I am not speaking of decreasing production.

Mr. HULL. With the present state of the world, every time you increase the price of wheat, somebody starves in the world.

Mr. MACDOWELL. I am not talking about decreasing the production; I am talking about increasing the production per acre so you can grow it cheaper and so you can sell it cheaper and still make a profit, which is the other side of it.

Mr. HULL. That is like the farmer who started to burn his corn.

Mr. MACDOWELL. That is economically wrong, of course. I guess there is no dispute about our economics. I think we are in accord on that.

Mr. PARKER. Mr. MacDowell, I believe that the coke that comes to this plant at Muscle Shoals comes from Birmingham?

Mr. MACDOWELL. Very likely; yes.

Mr. PARKER. How much coke is made there in a year?

Mr. MACDOWELL. I have not any idea. They make quite a little sulphate of ammonia there. I have not any figures, and, as a matter of fact, it is very difficult to get that.

Mr. PARKER. How much ammonia do they make there?

Mr. MACDOWELL. That I could not tell you, but I know there are a number of thousands of tons made there a year.

Mr. PARKER. Is most of that coke made there by the old beehive oven or by the modern by-products oven.

Mr. MACDOWELL. None of it by the beehive oven, and all of it by the modern oven.

Mr. PARKER. And only some few thousand tons come out of it?

Mr. MACDOWELL. A number of thousands. I do not know how many. I have not any data on that feature of it, but it is a fairly considerable production, because there is a good deal of iron made there.

Mr. PARKER. I was trying to get at the amount of ammonia that was made there.

Mr. MACDOWELL. I could not say.

Mr. PARKER. That is, the amount of sulphate of ammonia.

Mr. MACDOWELL. I could not tell you, but there is a considerable production made there.

Mr. PARKER. With such a large iron business as exists there, would not that produce a very large proportion of the sulphate of ammonia used in this country?

Mr. MACDOWELL. No; if you will figure that you get from 16 to 20 pounds of sulphate of ammonia per ton of coal coked and will multiply that by the coking capacity of these different coking centers, you can tell something about what the production is from that standpoint; but, further, you have got the city gas plants and they are coming in very rapidly.

Mr. PARKER. I believe you stated that there is 60,000 horsepower installed in the plant at Muscle Shoals.

Mr. MACDOWELL. As I recall, there is 60,000 kilowatts, which is 80,000 horsepower.

Mr. PARKER. How much coal would that plant use a year?

Mr. MACDOWELL. I could not tell you.

Mr. PARKER. About how much?

Mr. MACDOWELL. I could not even give you an estimate on that. It is a very large amount.

Mr. PARKER. Three or four tons or more per horsepower, is it not?

Mr. MACDOWELL. I have not any figures on that.

Mr. PARKER. I was trying to find out whether it would be cheaper to make the sulphate of ammonia by this expensive process you have mentioned or to use the coal that went into it.

Mr. MACDOWELL. If you have use for the coke. Of course, you would not go into the coking business to get sulphate of ammonia.

Mr. PARKER. No; but in operating that plant, how much would you get out of it?

Mr. MACDOWELL. From 16 to 20 pounds per ton, coked.

Mr. PARKER. But you do not know how many tons are used in that engine?

Mr. MACDOWELL. No, sir; I do not.

Mr. PARKER. Do you use cyanamid as a fertilizer?

Mr. MACDOWELL. Very little—a few hundred tons. I think our greatest consumption has been 3,000 tons in one year, and that was some years ago.

Mr. PARKER. Is there any difference, or can you compare sulphate of ammonia and cyanamid for that purpose and state which is the best?

Mr. MACDOWELL. Cyanamid is a form of nitrogen which is classified——

Mr. PARKER (interposing). I do not want to go into the details, but which is the best for fertilizer?

Mr. MACDOWELL. Sulphate of ammonia is the best.

Mr. PARKER. Why?

Mr. MACDOWELL. Because it is not alkaline, and you can use it in much larger quantities per ton and make a much more concentrated fertilizer.

Mr. PARKER. And the cyanamid, you think, is alkaline?

Mr. MACDOWELL. Decidedly so.

Mr. PARKER. And can not be used in large quantities?

Mr. MACDOWELL. It is not recommended by the makers at over 60 pounds of cyanamid per ton of finished fertilizer.

Mr. PARKER. I believe it spoils your acid phosphate if it is used in larger quantities?

Mr. MACDOWELL. It reverts the soluble phosphoric acid in the acid phosphate; yes, and it also has a tendency to release the ammonia from other forms off into the air.

Mr. FIELDS. Mr. MacDowell, I was very much impressed by your reference to the condition of the country with regard to nitrates during the war.

Mr. MACDOWELL. Yes.

Mr. FIELDS. Figuratively speaking, we were on very thin ice.

Mr. MACDOWELL. Very thin. I was worried to beat the band, but I did not let anybody know it.

Mr. FIELDS. And you would recommend that the country exercise due precaution to prevent being confronted with that kind of a condition again.

Mr. MACDOWELL. I certainly would; yes.

Mr. FIELDS. Would you recommend the maintenance of the Muscle Shoals proposition for the production of nitrates for war purposes in time of need?

Mr. MACDOWELL. I would.

Mr. FIELDS. Would you recommend the completion of the dams there, with that object in view, if there was nothing else to be considered?

Mr. MACDOWELL. I would.

Mr. FIELDS. And you would recommend the maintenance of nitrate plant No. 2, if for no other purpose, in connection therewith?

Mr. MACDOWELL. I would; yes. I think there is no question but what in the interest of national defense until we get along past the troublesome days of to-day, we ought to keep everything of that sort handy, so that it can be made use of very quickly in case of need.

Mr. FIELDS. I am very glad to have the benefit of your views upon that subject. With regard to the consumption of fertilizer, there has been a general increase in the use of fertilizer from the first use of it, has there not?

Mr. MACDOWELL. Yes; it was increasing, I would say, from an average of about 7½ per cent a year up to 1914. During some periods it would go to 10 per cent, but I would say an average of 7½ per cent yearly increase up to 1914.

Mr. FIELDS. Have you informed yourself as to the number or the percentage of farmers in the United States who now use fertilizer?

Mr. MACDOWELL. I could not give you definite information as to the number. The largest consumption of fertilizer is in the coastal plains, starting with

Aroostook County, Me., and going clear down to Florida, with a little swing around on the Gulf. That is the point of largest consumption, and if you gentlemen would be interested, I have here some copies of maps prepared by the Department of Agriculture showing where the plants for fertilizer production are located and the tonnages made. I think it will give you an idea of the matter. This was gotten out by the Department of Agriculture as a result of their study of the situation.

Mr. FIELDS. The fact that the first use and the greatest use of fertilizer is in the older sections of the country is an indication that the use of fertilizer will continue to increase, will it not?

Mr. MACDOWELL. Oh. yes. Wherever they start them and study them properly there is a general increase. You may slip somewhat. You slipped last year, and you have gone down from 8,000,000 tons to less than 4,500,000 tons.

Mr. FIELDS. You attribute that, however, to the general condition in agriculture, do you not?

Mr. MACDOWELL. Yes, sir.

Mr. FIELDS. There is a very large percentage of the farmers of the country who have not yet begun to use fertilizer at all.

Mr. MACDOWELL. Yes.

Mr. FIELDS. And the fertilizer people take on new customers every year.

Mr. MACDOWELL. Yes; and they are having materials tried out, and they are doing everything they can with the State people to find out what is needed in a given section of the country.

Mr. FIELDS. I notice you referred a while ago to one very important point with regard to the use of highly concentrated fertilizers. You stated that if the fertilizer was too highly concentrated it would injure the seed.

Mr. MACDOWELL. Yes; or the root growth coming from the germination of the seed.

Mr. FIELDS. That must necessarily be overcome and doubtless will be overcome to a great extent by the invention of new machinery with which to apply fertilizer to the soil and by changing the methods of application, will it not?

Mr. MACDOWELL. Yes; depending on the crop on which it is used. I had more particular reference to the grains, where the cost of growing is such that they want to get the maximum fertilizer efficiency from a minimum application. Therefore they drill it right in with the grains and it is right in the hill with the short root growth of the grain. You know the grain roots do not cover a large territory; but if you are fertilizing corn, where the roots extend out and hunt around for their grub wherever they can smell it, then you adopt a diffeent method of distribution.

Mr. FIELDS. In other words, to distribute fertilizer scientifically, you must distribute it according to the root of the plant which is to be fertilized?

Mr. MACDOWELL. Yes; and that is what we are studying, how best that can be done.

Mr. FIELDS. When the farmer first began the use of fertilizer, before he had any machinery for putting it on the ground, he would take a spoon and drop some fertilizer under each hill of corn.

Mr. MACDOWELL. Yes.

Mr. FIELDS. And he thought he got better results by putting all his fertilizer close to the plant.

Mr. MACDOWELL. Yes.

Mr. FIELDS. Whereas he has since learned that he gets better results by sowing it broadcast so the roots of the corn can feed on it and get water.

Mr. MACDOWELL. Yes; that is right.

Mr. FIELDS. And before we get to anything like a high state of development in the use of fertilizer, we must study more carefully the plants to be fertilized and the proper methods of putting the fertilizer in the ground.

Mr. MACDOWELL. Yes; that is right, and the other things which are necessary in the soil to make the fertilizer valuable, such as the bacteria which put a lot of this plant food in shape so the plant can take it. You see nitrate of soda, for instance, is carried all over the farm, and the plant takes it up. It is a nitrate. Sulphate of ammonia has got to be worked on by the bacteria and converted into a nitrate because it goes into the plant's stomach as a nitrate. So you have got to have food for the bacteria, and there is where your clovers and your organic matter come in.

Mr. FIELDS. And the agricultural experiment stations are working on this problem of the scientific development of the use of fertilizer.

Mr. MACDOWELL. Yes, sir.

Mr. FIELDS. And advising the fertilizer people on the one hand how to prepare the fertilizer, and the manufacturers of farming implements how to prepare the farming implements, and the farmer, on the other hand, how to use the combination of the two.

Mr. MACDOWELL. Yes.

Mr. FIELDS. All of which adds to the consumption of fertilizer by the farmer who has been using it for years and all of which also contributes new customers.

Mr. MACDOWELL. Yes; naturally. And I may say right there, gentlemen, that the way to get the cost of fertilizers down is for the farmer to buy more fertilizers. If you have a plant that is pitched to ship, say, 40,000 tons, and your various charges for your salesmen, office expenses, and everything of that sort are $200,000, that is $5 a ton. If that plant only ships 20,000 tons you have got a cost of $10 a ton. If you can squeeze it beyond 40,000 and get 50,000 tons you have then less than $5 a ton as your expenses. In other words, the fertilizer industry to-day has a capacity to make, I should say, from eleven to twelve million tons under forced draft. The biggest year it has had is 8,000,000 tons. It dropped down last year to $4,500,000 tons. The industry lost millions and millions of dollars, and in addition to that it has sixty or seventy million dollars still out for 1920 and 1921 with the cotton farmers, and it is paying interest on it and sweating like the devil, wondering where it is going to come out. I just instance that to show you that increased tonnage cheapens the cost of fertilizer and cheapens that cost of fertilizer to the farmers, because the fertilizer man's salvation is tonnage. He is foolish if he tries to pitch his price at a point where he will not move the greatest possible tonnage through his plant, because that is the way he gets his cost down and makes his business more secure.

Mr. FIELDS. As a farmer who uses a good deal of fertilizer, I regret to hear you state that our only hope of cheap fertilizer is to buy more of it, because I know that it is very burdensome to pay our bills now for fertilizer.

Mr. MACDOWELL. Yes. I will say, gentlemen, that in the South to-day a pound of cotton will buy as much, if not more, pounds of standard fertilizer than it would in 1914. Now, that is not a healthy situation for the fertilizer people, because they are losing a large amount of money.

Mr. FIELDS. Of course, we all understand that every class of business is now shot to pieces.

Mr. MACDOWELL. Every effort has been made. Our greatest obstacle to cheap fertilizer is railroad rates. We are 122 per cent over 1914 in the North, and about 116 per cent in the South, and we have many instances where the freights on fertilizer are 200 pe rcent over what they were in 1914. When you consider that on an 8,000,000-ton outshipment you bring in materials and ship out to the extent of about 14,000,000 tons, you can see how your freight pyramids up on a proposition of that kind.

Mr. FIELDS. Since you have referred to the freight rates, that brings to my mind another question. If plans can be worked out whereby highly concentrated fertilizers may be used, that will relieve the farmers materially on freight rates, will it not?

Mr. MACDOWELL. Yes; and on bags and labor and every other item that goes into the making of fertilizer.

Mr. FIELDS. By reason of the elimination of all that dead weight; the bags must be furnished, and that requires so much labor to handle it, and everything else.

Mr. MACDOWELL. But you can go only so far, and as far as we can foresee, practically, we can only get a certain concentration, because you have to have a certain dilution, or you will get a soil solution strength there which is too strong. In other words, it is a question of distribution, scattering all over the acre of ground, or in the right place for that particular crop, if it is one that goes too far down for seeding purposes.

Mr. FIELDS. That is where we need to be studying more scientific methods all the time?

Mr. MACDOWELL. Yes.

Mr. FIELDS. Judge Parker suggests that I ask you whether fertilizer could not be diluted on the farm?

Mr. MACDOWELL. It can, if you have dry sand, or if you can pulverize clay clods. But until you get your farm consumption very much bigger than it is now it is not, broadly speaking, a practical thing. In Ohio they use only 1¼ tons of fertilizer on a farm, and they do not use a high enough grade. In

South Carolina they use something like 4 tons, while in New Jersey they use 5. Certain farmers handling the thing in a big way can do it. We are trying all the time to improve the situation; that is a big part of the fertilizer business.

Mr. PARKER. I wanted to know whether you can not help the situation by diluting it at the station.

Mr. MACDOWELL. We do that so much better. We have plants that ship out as much as 50,000 tons a year. The stuff has to be treated and mixed and given a certain treatment so that it will be drillable when it goes out. You can not keep fertilizers in bags for a long time and have a good drillable condition. Nothing makes the farmer madder, after he has gone over a good part of his farm, than to find that his drill has not been working. Furthermore, we ship our phosphate rock from Tennessee and Florida, but the bulk comes from Florida because it is cheaper than in Tennessee. But that is scattered around and shipped by boat from Tampa to New York and Baltimore and other places, but Baltimore is the biggest producing center in the United States. It is way beyond its capacity; they try to do too much there. Then it meets our sulphur, which comes from the Texas and Louisiana fields. As a matter of fact, Mr. Chairman, the raw material situation is largely a southern proposition. It is owned and manned largely by southern people—that is, the sulphur and the phosphate rock. As a matter of fact, the discovery that this calcium carbide could be made into cyanamid was made at Sprague, N. C., by some southern men working in one of their laboratories, where they were working on phosphate rock experiments.

There is one other point, in considering the practicable side of the Muscle Shoals proposition as a large fertilizer-producing section, and that is in connection with the facilities for shipment. Muscle Shoals is on two branch lines of railroads. There is always a car shortage in Atlanta, Birmingham, and Montgomery, and with the present business, not this last year, but under normal conditions, we have the greatest trouble in getting cars to ship out fertilizers, and we could do a bigger business if we could get more cars. But if you will notice the maps you will see that we are shipping from many sections. We have the greatest difficulty now in getting the cars to haul 350,000 tons of phosphate rock every year under normal conditions from the southern phosphate fields to the plants farther north.

Some suggestion has been made that this amount of nitrogen produced at this plant would make 2,000,000 tons of 2–8–2. But 2,000,000 tons means 100,000 cars carrying 20 tons each. During the shipping season that would mean from 800 to 1,000 carloads a day. But it is not practicable to figure on any tonnage as high as that. As a practicable proposition, it is very difficult to get the cars because other people are using them, and other sections of the country must have their fertilizers, and in my judgment it is not practicable to develop such an unusual fertilizer manufacturing and shipping plant at that point. That is purely a physical proposition.

Mr. FIELDS. But that point, like all other points in the country, has its infancy. Of course, there might be such development there as would justify the construction of greater transportation facilities.

Mr. MACDOWELL. Yes; and you have the river, and you may be able to barge some stuff. There are several large plants at Nashville on that river, but it is very seldom that they barge anything because they have not the barge facilities. Then, too, you have to keep fertilizers under cover. That means that you have to have facilities at the different stations along the river to properly take care of that stuff, and we have not got those facilities at the present time. But we hope we can get them, because that is one of the biggest things we can do, to develop a terminal for that stuff so that we will not have to pay so much dead freight. We are not there to-day, and it is a slow development.

Mr. QUIN. Mr. MacDowell, you are at the head of the Armour fertilizer industry?,

Mr. MACDOWELL. Yes; I started that by-product business and developed it.

Mr. QUIN. How long ago?

Mr. MACDOWELL. It was started in 1894.

Mr. QUIN. That is their method of disposing of waste?

Mr. MACDOWELL. We found that we had these waste materials, and we wanted to increase the value of the hog, and we got into it for that reason, and to avoid being shut up as a public nuisance.

Mr. QUIN. How many factories have you?

Mr. MACDOWELL. We have, I would say, outside of the packing houses, some twenty odd plants around the United States, two in Cuba, one in Porto Rico, and then we have plants in South America and around the world.

Mr. QUIN. The ones where the packing houses themselves are located use a great many of the elements of waste from the stock which is slaughtered, do they not?

Mr. MACDOWELL. Everything that can not be better used for something else goes into those materials; yes.

Mr. QUIN. And you can produce your fertilizer cheaper at the factory close to your slaughterhouses than you can somewhere else, can you not?

Mr. MACDOWELL. If we were dependent on that material; yes.

Mr. QUIN. What fertilizer elements come from the stock yards?

Mr. MACDOWELL. Nitrogen and phosphoric acid. I may say as a matter of interest that within the last six or eight years much of the blood and a great deal of the tankage has been going out to Mr. Hull's country in Iowa to feed hogs, and we get the fertilizer only indirectly. Many of the packing-house products are getting into the feeds.

Mr. QUIN. Do you get any potash out of the slaughterhouse products?

Mr. MACDOWELL. No, sir. I may say that I developed the first potash mine in the United States, personally, out in Utah; but we do not get any potash out of by-product stuff.

Mr. QUIN. This country is short on that element of fertilizer, is it not?

Mr. MACDOWELL. As far as its own production is concerned; yes.

Mr. QUIN. We have been dependent upon importations from Germany, so far as potash is concerned?

Mr. MACDOWELL. Yes; and from France now.

Mr. QUIN. Do you gentlemen have any idea that any important sources for potash can be discovered here in the United States?

Mr. MACDOWELL. I have been hopeful that it can be made economically near Salt Lake City, to the west of Salt Lake City. I have had engineers go through that field very carefully, and as far as the cost out there is concerned, it can be made economically at Searles Lake in southern California.

Mr. QUIN. That is kelp?

Mr. MACDOWELL. No; that is some of the brines in the old, dry lakes. There is that plant there, and there are lakes out in Nebraska that make pretty fair potash. But the trouble is they are so far away from the coastal plain section, so that it would be difficult to make use of them because of the high cost of transportation. That is the difficulty, and I do not know how we are going to overcome it, although we may be able to get water transportation from Searles Lake later on. When I say that I mean that the industries are paying from $13 to $20 a ton freight charges on potash from Salt Lake City or from the brines of Nebraska down to the sections in the South where they use them. And we are getting our potash from France and from Germany to-day at $2.70 a ton by water. There is your problem. I do believe that we will discover some way of developing some potash in this country, and that is one reason why I had Mr. Swann do some work in that section, because I was hopeful that he might stumble on something which would be beneficial.

Mr. QUIN. What are the ingredients of fertilizer that go into vegetables? You spoke of the trucking industry; just what do you mean?

Mr. MACDOWELL. You grow truck generally on sandy loams, with not over 8 per cent of clay, and if you get that you could in two or three weeks get a good start in maturing your truck. You use fertilizer there because the sandy soils are not very rich. You use quite concentrated fertilizer, especially on some truck crops, running as high as 15 per cent potash.

Mr. QUIN. What percentage of nitrogen do they use on the truck crop?

Mr. MACDOWELL. They run as high as 10 per cent of ammonia and 8½ per cent of nitrogen. That is one of the sections where they use a lot of nitrogen, and Aroostook County, Me., which is one of the most heavily fertilized sections of the world, and also the Hawaiian Islands, beat any other section. They use 2,000 pounds of a fertilizer containing 5 per cent of ammonia and often as much as from 6 to 8 per cent of phosphoric acid and from 7 to 10 per cent of potash.

Mr. QUIN. What do they use on cotton?

Mr. MACDOWELL. On cotton they use, speaking in averages, about 3 per cent of ammonia, 9 per cent of phosphoric acid, and 3 per cent of potash. The average has been going up. But the better planters are using higher grades than that, such as 4–10–4, and along that line. We have been putting out

ourselves an acid phosphate of 16 per cent. We do make it stronger than that, but to get it drillable we make a combination of 2–16–2. That is 16 per cent of acid phosphate, 2 per cent of ammonia, and 2 per cent of potash. On the other hand, to compete with the 1–8–1 stuff, which we do not believe is the economical thing for the farmers to use, we are putting in a combination of 2–16–2, which saves the farmer $10 a ton.

Mr. QUIN. One method of applying fertilizer in the truck industry is by spraying, is it not?

Mr. MACDOWELL. No; that is used only a very little. It is mostly applied by broadcasting or with some drills. Broadcasting is rather an extravagant way in which to do it, however. They have found that drilling and putting it in little rows, with a certain application, will bring them more money than by using the broadcasting method, and thus using it rather extravagantly.

Mr. QUIN. They have a method of placing the fertilizer on the crop after the crop is up and partly worked out, do they not?

Mr. MACDOWELL. Yes; they do that in certain sections of the country, and that is what they call top dress. Sometimes they make a second, or even a third application.

Mr. QUIN. They have several methods; one is to put it down when they break the ground?

Mr. MACDOWELL. Yes.

Mr. QUIN. In a drill?

Mr. MACDOWELL. Yes.

Mr. QUIN. They have another method, by putting it down while they are planting?

Mr. MACDOWELL. Yes.

Mr. QUIN. And then they have another method by which they apply it by spraying the plants?

Mr. MACDOWELL. Yes; but the spraying method is not very heavily used, because the soil has the power of fixing the salts in the soil, and you do not want your roots to come up to the surface; you want the fertilizer to stay in the ground below the surface. They are just like dogs, they will go where the grub is, and you have to keep it down.

Mr. QUIN. We have the practical men understanding the different soil needs for fertilizer, and what the different types of crops need in the way of different percentages of fertilizers. Do you think the agricultural colleges and the experimental stations in each State, and the farm demonstrators in each county should deal directly between the fertilizer producer and the consumer?

Mr. MACDOWELL. You mean having them engaged in business?

Mr. QUIN. No; I mean telling the farmer what the soil needs.

Mr. MACDOWELL. That is our endeavor, so far as we can get them to do it; we think that is sound. But we do not believe the fertilizer industry should carry on experimental stations or do that work that the Government itself can do more impersonally than we can. We think that is their business to tell the farmer those things.

Mr. QUIN. And the national association of which you are president has that as one of its functions, to give the farmers what is best suited to their soils?

Mr. MACDOWELL. Yes; we are trying to help sell the work which these scientific men do in their stations. They really need it, because there is a wonderful lot of scientific development hidden away in pamphlets that nobody gets at. We do not think they are especially good salesmen of the work which they do. They are content when they make their reports.

Mr. QUIN. In the type of fertilizer for cotton which you are familiar with and sell in my country, how much of that in a ton is sand and waste?

Mr. MACDOWELL. That depends upon what kind of material you use.

Mr. QUIN. I said fertilizer for cotton.

Mr. MACDOWELL. Take 3–8–3.

Mr. QUIN. That is about what you have for cotton?

Mr. MACDOWELL. Yes; or about 3–9–3. There is 1,700 pounds of acid phosphate in it at the beginning. If you use cottonseed meal you have 60 pounds of fertilzer, 7 per cent, and it would take 800 pounds of cottonseed meal to give the 3; and that would be 1,000 pounds there, and 800 pounds of meal; and if you want 8 per cent you have only 300 pounds leeway there. If you use muriate of potash, you use roughly about 100 pounds of muriate of potash. Or, if you do not use muriate of potash you would use some other form that did not give so much. And you could correct that without much trouble.

Mr. QUIN. That is the cottonseed meal is helping us in making fertilizer?

Mr. MACDOWELL. It is right now, although some of it is going in because the spinner wants it, he is asking for it, and it has to be given to him.

Mr. QUIN. The elements of fertilizer can be made at the Muscle Shoals plant?

Mr. MACDOWELL. There are two things you can make. One is your nitrogen and the other is the phosphoric acid, either in the regular way or by the electric-furnace method, if that works. As far as potash is concerned, you could bring your shales in there and make your potash. But I would say, in that connection, however, the cheaper thing would be to buy the French and German potash and ship it in here.

Mr. QUIN. If you can get the potash and the nitrogen, what is the other substance?

Mr. MACDOWELL. You have potash, nitrogen, and phosphoric acid.

Mr. QUIN. That makes fertilizer, does it not?

Mr. MACDOWELL. Yes; that is right.

Mr. QUIN. That is the complete fertilizer in the proper proportion to be applied on any crop?

Mr. MACDOWELL. You have to mix it to get your proper proportion.

Mr. QUIN. Those are the three fertilizer ingredients?

Mr. MACDOWELL. Oh, yes.

Mr. QUIN. And all of those fertilizer ingredients can be obtained from the raw materials that are at or in the vicinity of Muscle Shoals?

Mr. MACDOWELL. Or in that neighborhood; yes. For instance, at Birmingham they have sulphate of ammonia. They get phosphoric acid or phosphate rock from that territory and ship it in and treat it. They get their acid from the Tennessee Copper Co. And there is another illustration of the usefulness of fertilizer. The using of that acid permits the plant to run, and the plant employs thousands of people, which is its direct contribution to the welfare of that community through being able to use acid for fertilizer purposes.

Mr. QUIN. Commercial fertilizer is a necessity now?

Mr. MACDOWELL. In that section; yes.

Mr. QUIN. You have to get it through these leguminous plants, if you can not get it commercially?

Mr. MACDOWELL. Yes; that is the first thing to do, anyway.

Mr. QUIN. From the soya bean and other leguminous plants. In the absence of that the farmer is bound to have fertilizer, or you would not do any business.

Mr. MACDOWELL. Or in the presence of it, if he wants to get the best results.

Mr. QUIN. If they can make at Muscle Shoals these three ingredients of fertilizer, which are all they use——

Mr. MACDOWELL (interposing). Outside of a little magnesium and a few other things.

Mr. QUIN. And put them in a concentrated form and get that concentrated fertilizer to the consumer, he can mix it or spray it, as the case may be. If that were done, would that not cut out the expense of shipping all of that filler?

Mr. MACDOWELL. In part he can do that to-day, and a good many farmers are doing it.

Mr. QUIN. Some gentlemen said they could not do it.

Mr. MACDOWELL. They are buying sulphate of ammonia, which contains 25 per cent of ammonia, and it is being shipped to certain fruit and truck farmers. They are doing it also with nitrate of soda. That is a part of the fertilizer business.

Mr. QUIN. There is no discount on the farmer being able to mix it with the filler, if he has any sand?

Mr. MACDOWELL. Yes; and if he happens to be located in the right location he can dry it and get it into shape to drill.

Mr. QUIN. You speak of a lack of shipping facilities from Muscle Shoals. Is it not a fact that with the concentrated form of fertilizer which would be sent out of there the large number of cars you refer to would not be required?

Mr. MACDOWELL. That is true if he does ship nitrogen which he makes; it would require fewer still.

Mr. QUIN. This project as contemplated proposes to improve navigation there so they can float those products on boats out into the Ohio River and send them out that way?

Mr. MACDOWELL. Yes.

Mr. QUIN. Then there would not be any objection to that, if you can make that stuff and get it to the seaboard at $2.20 a ton?

Mr. MACDOWELL. We can do that now at Nashville, for instance, which is very close to the phosphate field. The plants are right on the river, but there are no barges and no facilities for handling it.

Mr. QUIN. Your association in the literature which was sent to each Member of Congress stated that obviously no matter how cheap the Muscle Shoals plant could make sulphate of ammonia, it could not greatly reduce the cost of commercial fertilizer.

Mr. MACDOWELL. Yes.

Mr. QUIN. You did not include in that statement the consideration of how cheaply they may produce phosphoric acid, did you? You did not figure that?

Mr. MACDOWELL. No; that was not figured.

Mr. QUIN. Did you figure on them producing the phosphate so close to that plant? It is very close to that plant?

Mr. MACDOWELL. Yes; it is very close to Nashville. The cheapest phosphorous beds are in Florida, at tidewater.

Mr. QUIN. They can produce the other ingredients there, too?

Mr. MACDOWELL. Yes.

Mr. QUIN. Then if these three ingredients of fertilizer could be produced at the Muscle Shoals plant, your statement could not apply, could it?

Mr. MACDOWELL. It would not apply in full force, if they can produce these materials, which they have not commercially done. That is, potash has not been commercially produced. I do not think they have gone over 70 per cent utilization, and it is much cheaper to buy that potash from Germany than to try to make it. The phosphoric acid is cheaper to make by the acid process than by the other process.

Mr. QUIN. We will assume they could not make it. That is one of the elements. The other two elements can be produced at Muscle Shoals. In this big, yellow circle on the circular you sent out you say that the ordinary fertilizer has only 4 per cent, on the average of sulphate of ammonia.

Mr. MACDOWELL. On the average; yes.

Mr. QUIN. Then you say that the other necessary ingredients, such as organic ammoniates, nitrogen, potash, phosphoric acid, and the mixing, and bagging, and freight, and other necessary costs amounts to 29 cents. Is that a correct statement?

Mr. MACDOWELL. From the cost standpoint; yes.

Mr. QUIN. Then the ultimate consumer of the fertilizer is paying most of the expense of the fertilizer for the mixing, and the bagging, and the freight, and storage, and other charges on it.

Mr. MACDOWELL. He is paying quite a lot; yes.

Mr. QUIN. About what percentage now would you say that these real fertilizer elements amount to by the time it gets to the ultimate consumer? You are familiar with the business, and I would like to know your opinion of that percentage.

Mr. MACDOWELL. As I recall, freight is 35 per cent of the cost; that is, freight alone. The ingredients, if I recall correctly, as determined by the Department of Agriculture, normally constituted about 65 per cent formerly. Now, they do not constitute so much.

Mr. QUIN. That would include the whole 100 per cent?

Mr. MACDOWELL. I say now they do not cost so much, and we have figured the freight, which did not cost so much, to be about double, so that that makes the difference now.

Mr. QUIN. It is double what it was before the war?

Mr. MACDOWELL. Yes. The big element of cost lately has been lack of business.

Mr. QUIN. Do you mean that fertilizer costs more because you do not sell so much of it?

Mr. MADDOWELL. Yes; the expenses are almost doubled on that end of the proposition.

Mr. QUIN. But what have you to say about the fact that the farmer is not able to buy it?

Mr. MACDOWELL. That is one of the difficulties at the present time. You can not get your costs down by not doing business. You have got to get your costs down by doing business. That is what we want to do if we can.

Mr. QUIN. We want to know why it is that they can not cut out all this expense of this filler, and the freight, and the cost in handling it.

Mr. MACDOWELL. Because up to date it has not been thought advisable by agriculturalists to use too concentrated mixed fertilizers. And further than that, the farmer himself has his own liking for fertilizers which we think are not strong enough, and we are trying to get him to use stronger fertilizers.

Mr. QUIN. Mr. MacDowell, where they have the farm demonstration agent to give the farmers instruction as to the proper way of mixing that, do you not think it is a matter of knowledge between the commercial fertilizer manufacturer and the farmer, and that knowledge should be carried to the farmer?

Mr. MACDOWELL. Yes; he has the knowledge, and if he wants to do it, he can mix the fertilizers any time he wants to try it; there is nothing to prevent him from doing it. But you must remember that fertilizers are shipped in carload lots, whereas fertilizer ingredients are shipped in less than carload lots. And if the consumption on the farm is only a ton and a quarter, as it is in Ohio, it is cheaper to take low-grade fertilizer and try to fuss with it himself, but when we get into big trucking operations it is a different proposition. I will say this, that we prefer, as an industry, to ship high-grade goods.

Mr. QUIN. I presume you read the evidence of Mr. Ford's engineers?

Mr. MACDOWELL. No, sir; I did not.

Mr. QUIN. If Mr. Ford can make this fertilizer in any form of finished product, or in a concentrated form, do you not think it would make it cheaper to the farmer if that cost is so much less than it would be elsewhere on account of the cheap water power?

Mr. MACDOWELL. I do not know how much power would come in on that proposition, but the farmer can get concentrated fertilizers to-day. Just what Mr. Ford is proposing to make. As a matter of fact, there is 4 per cent superphosphate made to day, and it is unsalable. The American Cyanamid Co. put in a plant to make ammonium phosphate, the very thing which they have been talking about making at Muscle Shoals. But the plant is closed; they can not afford to run it.

Mr. QUIN. They belong to the National Fertilizer Association, do they not?

Mr. MACDOWELL. I think they do; they are an associate member.

Mr. QUIN. There is another company making fertilizer, the Virginia-Carolina Chemical Co. They are members of the National Fertilizer Association?

Mr. MACDOWELL. Yes.

Mr. QUIN. That plant at Muscle Shoals was constructed for the manufacture of nitrates in time of war, and fertilizer in time of peace, was it not?

Mr. MACDOWELL. Well, they hoped to make it in time of peace; yes.

Mr. QUIN. If Mr. Ford says he can make this fertilizer there—and he said that through his representatives at a hearing by this committee—at 50 per cent less than it is being made for to-day, would not that be a great boon for the people of this country?

Mr. MACDOWELL. He can not do it unless he steals his stuff, and I am quite sure he could not do that.

Mr. QUIN. Why then is your association so much opposed to this plant down there being devoted to the manufacture of fertilizer by Mr. Ford?

Mr. MACDOWELL. We have not any objection to Mr. Ford manufacturing fertilizer, if he wants to get into it. But we have this stock, as I explained earlier, that Congress is asked to put in 800,000 or 850,000 horsepower, with electrical equipment, in order to be able to use 100,000 horsepower to produce nitrates. Is that sound from the standpoint of public policy?

Furthermore, the fertilizer industry felt that the Congress should know more about the fertilizer business and the need for additional fertilizer now. One of the great troubles with this country and the world is that there is about 150 per cent of over normal capacity in everything. We have got a big excess of capacity in fertilizer to-day. We have a big excess of capacity in sulphate of ammonia, which will be made at Muscle Shoals. Simply because you have something you can make something out of, we do not believe it should be used to make it unless there is need for it. If Mr. Ford goes into the fertilizer business, we will compete with him, and if we can not we will get out of the business. We have to take a risk. We have made all these developments, and if we can make these things more cheaply by reason of improved development we think we ought to have a chance as well as Mr. Ford, and we do not think he should have a monopoly down there.

Mr. QUIN. Did you not have a chance to bid on this plant?

Mr. MACDOWELL. Fertilizer people would not bid on a proposition of this kind.

Mr. QUIN. The invitations were sent out generally.

Mr. MACDOWELL. I know, but it is not a fertilizer proposition. As to the phosphoric acid, I do not agree with some of the gentlemen in regard to that.

I think there are opportunities there of making concentrated fertilizers cheaper than by the acid method, quite materially cheaper than by the acid method. But I say, as a practical proposition, supplying stuff to the farmers all over the country, you can only go so far, because these concentrated fertilizers have been made for 35 years. They have been making this concentrated stuff in Belgium and Holland for a number of years, but they have to send it away to get rid of it. There have been two companies making this triple-strength stuff, and they have either only been able to sell a limited amount of it or they can not do it at all, although it is shipped all over the country. That is the triple-strength phosphate. It takes time to work those things out.

Mr. QUIN. I see that they are using the concentrated fertilizer in large quantities in my country. I know they are using it.

Mr. MACDOWELL. Yes; and we sell a lot of it. We would like to sell more of it.

Mr. QUIN. Then these gentlemen who say it can not be done are ignorant on that subject?

Mr. MACDOWELL. I will say that from the standpoint of fixing nitrogen, Mr. Ford can not compete at Muscle Shoals with the cost of the present methods of recovery from by-product coke, and we have a surplus from that.

Mr. QUIN. With the scientists at work all the time, and with Mr. Ford's ability to get the best scientists on his staff, do you not presume that in a short time this industry will be revolutionized and that the fertilizer products will be at a much cheaper price than at the present time?

Mr. MACDOWELL. I hope so. I am working to that end as fast as I can.

Mr. QUIN. Did you not state that in five years' time the present method will be obsolete?

Mr. MACDOWELL. I think so; yes.

Mr. QUIN. It is not unreasonable to think that Mr. Ford should begin to make it cheaper very soon?

Mr. MACDOWELL. He could not use his equipment and would not need all that power for that purpose.

Mr. QUIN. He could use such of it as he did need for that purpose.

Mr. MACDOWELL. Well, I think he could use the power to better advantage making something else.

Mr. QUIN. You do not think he is going to let that power go to waste?

Mr. MACDOWELL. No; I think not.

Mr. QUIN. You know that Mr. Ford, as a business man, would utilize it?

Mr. MACDOWELL. Yes; and I think myself that it is a tremendous amount of power to put in the hands of one man to say who shall use it. Furthermore, from the engineering standpoint, I think that you are interested to see that he develops as much of the primary power——

Mr. QUIN (interposing). That is what he is going to do down there; we can not do it. This man proposes to do that very thing, to develop 1,000,000 horsepower.

Mr. MACDOWELL. There is large secondary power. You have, from an engineering standpoint, only got 150,000 primary horsepower down there. I think you ought to go to work and reservoir it back so that there will be from 250,000 to 350,000 primary power down there. You do not want to have an industry established and working down there for four or five months in the year, and have all those men hunting after jobs for the balance of the year. You do not want to have the industries down there in such a condition so that when you first wake up in the morning you have to go out and find out whether there is enough power to work with during the day. Those are our problems. It ought to be balanced and worked upon sound engineering lines, and the fertilizer business is with you on that feature of it. Where we get an industrial section developed it is better for the farmer in finding a sales market for his truck crops.

I only wanted you to know that there is no need at the present time, and probably will not be for some time, for the nitrogenous fertilizer which it is proposed to make at Muscle Shoals. I wanted you to know that Germany and England will be in the market and control the price, because those things come in duty free and they can control the price over here, and that Chile has got to sell stuff to get buying power in this country, and we want to sell her something. As far as I can see there is no danger of nitrogen starvation in this country for a long time.

From the preparedness standpoint you should keep this nitrate plant, in my judgment. If you want to work out the financing of it as best you can, you can sell nitrate plant No. 1, and you can sell a lot of things. As I understand it, it has been estimated that the things down there have a value of approximately $16,000,000, which is $11,000,000 more than Mr. Ford offers for it. You can sell the whole proposition and have the nitrogen-fixation plant available, if necessity demands its use, and you can commandeer the power at any time. You can keep up the nitrogen-fixation plant on an economical-investment basis, hold it until there is need for it for fertilizer purposes. Let us hope there will be no need for it for war purposes. That is my thought in connection with it.

The CHAIRMAN. My recollection of the testimony before the committee is that Ford says he can make the fertilizer about one-third cheaper than what it is being sold for now. I do not remember that he said he could make it one-half cheaper.

Mr. QUIN. Mr. Mayo stated, and I asked him about it, whether he could make it 33⅓ per cent cheaper, and he said he could; and then I asked him if they could make it one-half cheaper, and he said certainly.

The CHAIRMAN. It may be you are right about it, but I remembered very well his statement about making it one-third cheaper.

Mr. FISHER. Mr. MacDowell, were you with the War Industries Board while the building of the nitrate plants was going on?

Mr. MACDOWELL. Yes, sir.

Mr. FISHER. So far as the transportation of the material to that point was concerned they were able to get material transported there to build those two enormous plants?

Mr. MACDOWELL. Yes, sir.

Mr. FISHER. It is on the main line of the Southern Railway, and there are two branch lines of two other roads that run into Muscle Shoals?

Mr. MACDOWELL. Yes, sir.

Mr. FISHER. You were in a very important position on the War Industries Board, and I take it it was part of your duties to keep the United States prepared, in so far as nitrates were concerned, for a supply of ammunition for 4,000,000 men?

Mr. MACDOWELL. Yes, sir.

Mr. FISHER. Throughout that period of time, while you were giving that thought serious study, you did come to the conclusion that the United States should have prepared itself, so far as its supply of nitrates was concerned, before the war?

Mr. MACDOWELL. Yes.

Mr. FISHER. If the Committee on Military Affairs is presented with a program of nitrate preparedness which has the indorsement of the Chief of Ordnance, that plan ought to be very carefully considered by the committee before being rejected, ought it not?

Mr. MACDOWELL. I would think so; yes.

Mr. WRIGHT. Mr. MacDowell, you think this plan of the utilization of concentrated fertilizer will gradually come about?

Mr. MACDOWELL. We are working in that direction, but how far it will go I do not know, because there are certain soil problems in the use of it that stand in the way of going too far.

Mr. WRIGHT. You would be interested in making concentrated fertilizer?

Mr. MACDOWELL. We want to make concentrated fertilizer.

Mr. WRIGHT. You can sell concentrated fertilizer to as good advantage as you can sell fertilizer with the filler.

Mr. MACDOWELL. We do not use much filler. Of course, we do make a lower-grade stuff. For some of our stuff you might pay 60 cents a unit for it in Baltimore. However, you could use the 50-cent stuff, and you would use it because it is cheaper and it can be used with the so-called filler. That is true all the way through. As you get into the more concentrated materials you want to get into the more concentrated finished goods, because the filler is a hard thing to get; you do not like to get it, you prefer not to use it, because you prefer the concentrated stuff.

Mr. WRIGHT. When you put in the filler, it is put in so that the fertilizer is properly distributed?

Mr. MACDOWELL. Yes; and to use all of the proper materials. For instance, you may use waste beet slop and get 1 per cent ammonia in that mixture without any filler, practically. You may want to use 7 or 8 per cent of cottonseed meal to make 1 per cent, and you have to put some filler in because you are using a more concentrated material. We are trying to get where we can make standard things, and we are trying to utilize everything that comes off the farm

and send it back to the farm. We are trying to do all those things by consolidations which we think are important in the interests of the country and of the world. We ourselves as an industry are trying to be helpful and give service to the country. I think I can safely make that statement.

Mr. WRIGHT. You are a practical fertilizer man and have devoted a great deal of time and thought to the industry. I had always thought that the proper way to intelligently use commercial fertilizer was to first have your soil analyzed and ascertain from that analysis what elements of plant food it possessed and then supply the deficiency.

Mr. MACDOWELL. That does not always work.

Mr. WRIGHT. I understood Prof. Whitney to say that that had not proved a success.

Mr. MACDOWELL. Because sometimes the soil particles are coarse, and you find stuff that can not get to the surface.

Mr. WRIGHT. If that is not the correct way, how would you do it?

Mr. MACDOWELL. We try it on the ground by using different formulæ.

The CHAIRMAN. You spoke of Searles Lake?

Mr. MACDOWELL. Yes.

The CHAIRMAN. In what part of California is Searles Lake?

Mr. MACDOWELL. It is in San Bernardino County, about 150 miles northwest of Los Angeles.

The CHAIRMAN. It is down there near what is called Death Valley?

Mr. MACDOWELL. Yes; it is a little bit to the west of Death Valley; and we have a good many millions of tons of potash in there.

The CHAIRMAN. Is not the ownership of that claimed by a Germany company?

Mr. MACDOWELL. No; on the contrary there are two plants there. One of them is owned by the Trawna Co., which was almost entirely British, with some American capital. The other is owned by the Solvay group, now a part of the larger Allied Chemical Co., I think they call it. There is no German element there as far as I know, or anything approaching it.

The CHAIRMAN. There has been a good deal of discussion about the ownership of that lake.

Mr. MACDOWELL. Yes; there was trouble to begin with. At first it was located as a Trawna deposit, and there was some trouble in reference to the ownership. I think the English Goldfield groups had a mortgage there. I knew about that very early, because it has been the custom for persons to ask me about potash when any new possibility comes up.

The CHAIRMAN. I remembered what I read in the papers in San Francisco, and there was some difficulty about the ownership. Is not that one of the reasons why they have not been finding so much potash there?

Mr. MACDOWELL. No; I do not think so. They had trouble in reference to the titles. Part of that territory was withdrawn from entry under the President's proclamation, and then they had to work under the leasing bill, to know how it could be gotten hold of. So I think the Trawna Co., the first company, did not have that trouble on part of that property because they had located and had their titles early. The trouble has been that in the first place there is borax in the brine. They make borax, and some of it hurt the crops in certain sections. But they have overcome that, and they have a very good thing, but their rate is very high, and with the German and the French going back to prewar prices on potash they could not possibly meet the situation.

Mr. MCKENZIE. Mr. MacDowell, you are speaking here as the representative of the members of the American Fertilizer Association?

Mr. MACDOWELL. The national association; yes, sir.

Mr. MCKENZIE. And in your statement before the committee, of course, you are expressing the views of the members of that association?

Mr. MACDOWELL. Yes, sir; and probably some views of my own developed by the questioning, which they do not know anything about.

Mr. MCKENZIE. I was listening to your statement and your testimony, and from it I draw the conclusion that the people whom you represent object to the Ford proposition on two grounds; first, that it is against public policy for the Government to recognize such a proposition; in the second place you object because you believe that under the terms of the proposed contract Mr. Ford would be given advantages which would make him an unfair competitor with the members of your association.

Mr. MACDOWELL. He might be; yes.

Mr. MCKENZIE. In other words, you fear that operating under the so-called contract Mr. Ford would have an advantage over the present manufacturers of fertilizer.

Mr. MACDOWELL. He might have; I am not stressing that point strongly; I am trying to present to you gentlemen the broad viewpoint of whether there is need for making this contract from the fertilizer standpoint.

Mr. MCKENZIE. Coming down to your objections, those are your two objections?

Mr. MACDOWELL. Yes.

Mr. MCKENZIE. And they are the objections of the members of the American Fertilizer Association?

Mr. MACDOWELL. Yes.

Mr. MCKENZIE. Otherwise you would have no objections.

Mr. MACDOWELL. We have not any objections to Mr. Ford's going into the fertilizer business if he wants to go into it.

Mr. FIELDS. In that connection, however, Mr. MacDowell, you do not know of anybody in the United States who would assume the burden of maintaining a nitrate plant for the protection of the Government in time of stress without some compensation for it.

Mr. MACDOWELL. No; I do not know of anyone who knows the fertilizer industry who would want to take over that plant and want to operate it now.

Mr. FIELDS. I did not apply my question exclusively to manufacturers of fertilizer. You know of no citizen who would do that.

Mr. MACDOWELL. I do not know of anyone who knows anything about the business who would be willing to do that, from that standpoint alone.

Mr. FIELDS. So, if the Government is to maintain this as a preparedness proposition it must do this or it must lease it to somebody, to some individual under such terms as will enable him to do it.

Mr. MACDOWELL. Yes.

Mr. FIELDS. We must accept one or the other of those propositions?

Mr. MACDOWELL. Yes.

Mr. MORIN. What percentage of fertilizer used in this country can Mr. Ford produce, if he manufactures to the full capacity of the plant, and deliver to the farmer?

Mr. MACDOWELL. That is very difficult to say, because it is divided into two parts. He could ship 110,000 tons of nitrate without any trouble, and 200,000 tons of sulphate without any trouble. But going into the manufacture of complete fertilizer, it is a question of how much he could do. I think the biggest fertilizer plant we have in the United States has a capacity around 300,000 tons, and every one of them is much too big. The way they make fertilizer and distribute it now is to go out into the territory where the goods are used, and then they ship in their rock without any filler, and then they ship in ther sulphur without any filler, 99½ per cent pure, and they make this sulphuric acid, and make those formulas right there. In normal times you would have this large number of plants which would give this service in a particular section. If you will look at the maps you will see the large number of small plants which have been developed on that theory. So far as the cost is concerned you can make fertilizer cheaper at ports than in the interior, because you can get the phosphate rock out from Florida for $2.15 per long ton by water, and you can not get it on a railroad for that amount. You can not bring up your sulphur for $2 a ton, and there is no land freight on the potash. So you can make it much cheaper at the ports than you can in the interior. Nevertheless, there has been quite a development of plants in the interior because there is service to be gotten. It is quite a job to distribute four or five million tons in four or five lots when the cars are scarce and the labor is scarce. It is all fixed stuff, worked under chemical processes.

Mr. MORIN. I thought I understood you to say that you understood Mr. Ford could make the fertilizer, but it would be impossible for him to ship it because of the shipping conditions.

Mr. MACDOWELL. Yes, sir; that is the point.

Mr. MORIN. He could not get the cars in there?

Mr. MACDOWELL. They expect you to ship out your maximum in three months in the South, and it would be practically impossible to start that in the last of January and finish it about the last of April. It has to be done in that time.

Mr. MORIN. He could only supply a very small percentage of the fertilizer used?

Mr. MACDOWELL. He would have to go a long way to do it, because there is very little fertilizer used around Muscle Shoals.

Mr. MORIN. You do not think, as a fertilizer producer, it would be of very great benefit to the country at large to have him go into that business?

Mr. MACDOWELL. He would be of service wherever he could reach, but as to the possibilities of supplying any large territory, I do not think he could do it, for physical reasons, as well as for lack of facilities.

The CHAIRMAN. The committee is very much obliged to you. You have given us a lot of valuable and interesting information.

(Thereupon the committee adjourned at 4.30 o'clock p. m. to meet to-morrow, Wednesday, February 22, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Wednesday, February 22, 1922.

The commitee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MR. GRAY SILVER, WASHINGTON REPRESENTATIVE AMERICAN FARM BUREAU FEDERATION, MUNSEY BUILDING, WASHINGTON, D. C.

The CHAIRMAN. Mr. Silver, I take it you are fairly familiar with the matters the committee has been considering for the last two weeks. Will you kindly state your name in full and the position you occupy?

Mr. SILVER. My name is Gray Silver, and I am the Washington representative of the American Farm Bureau Federation.

The American Farm Bureau Federation is greatly interested in the subject you have under consideration, Mr. Chairman, from several viewpoints.

The question of developing the water powers, in a broad way, is of great interest to the farmers, but in this particular proposed development the farmers are interested greatly in the fertilizer end as well as in the other proposals, and I will read you resolutions passed by our groups at different times recently to show you that it is not without mature study and thought on this case that they speak.

At the annual meeting of our national association in Chicago on March 4, 1920, they adopted a resolution as follows:

"We support the measure pending in Congress looking toward the operation of the nitrate plant No. 2 at Muscle Shoals for the production of nitrogen fertilizer compounds."

The CHAIRMAN. What is the date of that resolution?

Mr. SILVER. That was in 1920. That goes back some time.

The CHAIRMAN. That goes back to a period before Mr. Ford made any offer at all.

Mr. SILVER. Yes; I am presenting that to show that they are not recent converts to it.

The CHAIRMAN. Who was figuring on Muscle Shoals at that time?

Mr. SILVER. This was when the proposal was before Congress that they complete the dam and the Government operate it.

The CHAIRMAN. I understand.

Mr. SILVER. They were interested at that time and have been interested since.

Last fall at their annual meeting at Atlanta, Ga., in November, 1921, the following resolution was adopted, and in our national meetings practically every State is represented, because all but two of the States of the Union have State federations, and we have a large membership, and in this meeting of some 5,000 farmers this resolution was adopted:

"We recognize in the Muscle Shoals nitrate water-power project in Alabama such an essential measure to secure the preservation of our soil resources as well as to develop the industrial and transportation facilities of our Nation, that we urge the Congress of the United States to authorize the Secretary of War to enter into such contract or contracts with Henry Ford for the completion and continuous operation of the project as will protect the public welfare. If such authority is not promptly given, we reserve the right to institute such action as will guarantee the completion and operation of this enterprise under Federal supervision."

At a meeting of the southern group, as we call it, of the American Farm Bureau Federation, composed of some 15 States, with visitors from 12 or 14 other States, the following resolutions was adopted on January 20, 1922:

"Several hundred farmers, representing the many thousands in organized agriculture from 15 Southern States, as well as delegates from the West and far West, after careful investigation of the dams and power plants at Muscle Shoals, Ala., believe it to be an economic crime to continue to allow this development to lie idle and uncompleted.

"As a means to proper development we unreservedly indorse Henry Ford's offer to lease and operate the power and nitrate plants.

"We reiterate the stand taken at the last meeting of the Farm Bureau Federation in indorsement of the Ford offer.

"We recommend that Congress authorize the issuance of bonds necessary to to complete the dams at Muscle Shoals. This will avoid the necessity of taking funds direct from the Treasury. Henry Ford's offer would pay interest on such bonds, and the first earnings from the sale of electrical energy would amortize the bonds."

This resolution was adopted after the convention had visited the property itself at Muscle Shoals.

The CHAIRMAN. Where was that convention held?

Mr. SILVER. At Florence, Ala.

The CHAIRMAN. That is right at Muscle Shoals?

Mr. SILVER. That is right by the Muscle Shoals property; yes.

Secretary Wallace called a conference of those engaged in agriculture and related lines, as we use the expression, which met in the city of Washington on January 23 to 27, 1922, and the following resolution was adopted at that meeting, with farmers and others participating:

"*Resolved*, That to accomplish results without any further delay whatsoever we urge the Secretary of War to recommend and the Congress to accept Henry Ford's proposal to take over the hydroelectric power and air nitrate plants at Muscle Shoals under a guaranty to operate same for 100 years at its present capacity of approximately 100,000 tons of ammonium nitrate per annum, opening the Tennessee River to navigation, cheapening the production of fertilizer, metals, and other commodities, and assuring the United States nitrogen independence in peace or war."

That resolution gives you the thought and the proof that this subject has been in the farmer's mind, and in order to go into it very fully and not, perchance, to make any mistake, the American Farm Bureau Federation appointed a committee and had that committee visit Muscle Shoals and make a report to the American Farm Bureau Federation, which report I shall not read unless it is wished but will offer it for the record. If you do not care, I am not particular about its being printed in the record, but I am offering it simply to show that we have studied the matter carefully and to show that the conclusions arrived at, as evidenced by the resolution, are not without a proper and full study and a full understanding of what we think is involved, both in the Ford proposition at Muscle Shoals as a waterway and as a fertilizer development.

The CHAIRMAN. If there is no objection, we will put that report in the record.

Mr. FIELDS. I think, Mr. Chairman, a report made after a careful study by an organization like this ought to go into the hearings.

Mr. PARKER. How long is it?

Mr. SILVER. Thirty-six pages.

The CHAIRMAN. It represents practically the opinion of the farmers who are members of your organization?

Mr. SILVER. Yes.

The CHAIRMAN. I think, as making up a part of the record, it might be well to let it go into the record.

Mr. SILVER. Thank you, Mr. Chairman.

(The report referred to follows:)

92900—22——35

REPORT OF THE MUSCLE SHOALS COMMITTEE OF THE AMERICAN FARM BUREAU FEDERATION.

To the Executive Committee of the American Farm Bureau Federation.

GENTLEMEN: Your committee which was appointed to investigate the Muscle Shoals project has performed that duty in the double capacity of personally inspecting plants and by collecting the available information from all sources for your consideration. We beg leave to report as follows:

I. INTRODUCTION.

Since the signing of the armistice on November 11, 1918, many of the operations in which the Federal Government found itself engaged prior to that date have been discontinued on account of a peace-time basis not requiring certain war expenditures and activities to be continued. It is with a great degree of gratification that all citizens see our Government gradually discarding all expenditures and all projects that were purely incidents of the great war. There are a few undertakings, however, the necessity for which had been seen before our entrance into the war, that deserve the fullest consideration both by urban rural citizens to ascertain whether or not it is best to continue them indefinitely for the good of the general public.

There is no problem of conservation more vital than that of preserving the fertility of the soil of our country. Those who dwell in cities are essentially as much interested in this task as are those who actually till the fields. The food of our Nation must come largely from a well-preserved soil, and that soil necessarily must carry, either naturally or in the form of fertilizers, the proper nitrogen content. It has been said repeatedly that agriculture in its broadest sense has been neglected by the Federal Government in various ways. It is hoped that a genuine national policy of soil conservation and food production will be furthered at this time by taking such action relative to securing an adequate and economical supply of nitrogen as is recommended elsewhere in this report.

The outstanding war-time project which can be continued as a peace-time undertaking while at the same time retaining all its war-time functions for public safety is the Muscle Shoals project in Alabama. On account of the magnitude of this project not only in size but in importance to the whole Nation, your committee has thought it well to report in a comprehensive way and at some length. For clarity of presentation the subject matter has been divided into 11 parts with frequent comment by the committee and with two very definite recommendations at the conclusion of the report.

II. WHAT WAS SEEN AT MUSCLE SHOALS.

(*a*) The Tennessee River at Muscle Shoals, from which power is to be taken to operate the nitrate plants and for other purposes, is as large, taken at the mean or average flow, as is the Ohio River at Cincinnati, Ohio, the Mississippi River at Dubuque, Iowa, or the Missouri River at Omaha, Nebraska.

(*b*) The banks of the Tennessee River at Muscle Shoals are of such height that a hundred foot head of water may be held without building any retaining walls or dikes whatever except the dam proper.

(*c*) The pool formed by the dam will extend for a distance of 15 miles upstream, and the total amount of land flooded or damaged by the water is 9,000 acres. This area has been bought and paid for by the Government with a very few exceptions where condemnation proceedings are now nearing completion This land was secured at an average price of less than $45 per acre.

(*d*) The Wilson Dam is about one-third completed and more than one-third paid for, as will be seen when the immense expenses attached to the preparatory work are considered, which expenses do not again have to be met in finishing the project.

(*e*) Two sections of the Wilson Dam—one at the north bank and one in the center of the river on an island—are partially completed. There yet remains for construction on these sections the discharge gates at the top and the roadway above the gates.

(*f*) The foundation is laid for a large portion of the rest of the dam and the protecting cofferdams have been removed.

(*g*) The excavations for the power plant and south section of the dam have been made under protection of an immense cofferdam which will permit work to be carried on in that section if the work is not too long delayed.

(*h*) A construction bridge carrying several railroad tracks, and supporting seven derricks, each capable of lifting 10 tons, has been built.

(*i*) Twenty-five miles of railroad track have been laid to haul supplies, rock, sand, cement, concrete, etc.

(*j*) Several locomotives, some of which weigh 65 tons each, have been used constantly in hauling material to the concrete mixers and thence to the dam.

(*k*) Three mixing plants with capacity to keep all the other equipment moving at full speed have been installed, one on the island near the center of the stream, one on the north shore, and one on the south shore.

(*l*) A large construction camp has been erected with individual homes for married men, bunk houses and mess buildings for single men, and administration offices and residences for the official corps.

(*m*) The Wilson Dam is 4,100 feet long; its base, which is sunk 12 to 15 feet into the solid rock of the river bed, is 160 feet wide; its height from the original river bed to the bottom of the overflow gates is 80 feet and to the roadway on the top 120 feet. This structure when completed will be the largest single piece of monolithic concrete construction in the world.

(*n*) Two locks for navigation purposes are being constructed at the north end of the dam, each one having a lift of 45 feet, and with other dimensions adequate to accommodate the largest river craft.

(*o*) Nitrate plant No. 2 at Muscle Shoals stands to-day fully equipped and capable of producing 110,000 tons per annum of ammonium nitrate.

(*p*) The site on which this plant is built comprises approximately 2,000 acres.

(*q*) At the height of operations on this plant 20,000 workmen were employed. It was built in one year, and the first ammonium nitrate was produced one day less than a year from the time of starting construction work. At that time 90 per cent of the mammoth plant was finished, and to-day it is 100 per cent complete for the production of fixed nitrogen.

(*r*) The steam power plant was built so that nitrate plant No. 2 could begin production without waiting for the completion of the Wilson Dam, which was expected to take approximately three years. This steam plant produces nearly as much electrical energy as any other steam plant ever built and contains one steam turbine unit with electrical generators which generates 60,000 kilowatts or 80,000 horsepower—being one of the largest turbines ever constructed and operated. In addition, there is place for a smaller unit which would be capable of producing 30,000 kilowatts, or 40,000 horsepower, making a total horsepower for the entire steam power electric plant when completed of 120,000 horsepower, which is ample to operate the electric furnaces in another part of the plant.

(*s*) The boiler room of this immense plant comprises a battery of 15 units, each rated at 15,000 horsepower. These boilers when running full capacity consume approximately 1,500 tons of coal each day, which fuel is dumped from the cars on overhead tracks into vast bins, and thence fed into the furnaces by automatic stokers without being touched by human hands since leaving the mine. The three stacks to provide draught for these furnaces vary in height from 275 feet to 300 feet, and in diameter at the base from 23 feet to 26 feet.

(*t*) The kiln room where the lime rock is burned to lime contains seven cylindrical kilns which turn slowly and which are heated by a blast from finely ground coal. These kilns are of steel, lined with fire brick, and are so mounted that the lime rock when placed in the higher end will gradually travel the entire length of the kiln, which is 125 feet and emerge from the lower end as burned lime. Approximately 1,500 tons of lime rock can be burned in a day, which shrinks in the form of burned lime to about one-half that weight.

(*u*) The electric furnace building where the burned lime and coke are fused electrically into carbide, as the first step toward fixing nitrogen, is about 1,000 feet long and contains 12 electric furnaces, each of which requires 10,000 horsepower for its operation. Only 10 of these furnaces are expected to operate at any one time, leaving 2 for repairs at all times. The giant electrodes through which the electrical current passes and which furnish the heat for fusing the burned lime and the coke, are subjected to such terrific heat that they have to be renewed every three days. This shows the necessity for extra furnaces.

Each furnace produces 50 tons of carbide per day, or a total for the 10 furnaces of 500 tons. Practically all work of handling the materials used in nitrate plant No. 2 is done by machinery. However, these electrical furnaces must be fed by hand in order to fill the blowholes that appear in the molten mass, which, unless filled by shovelfuls of coke and lime, cause rapid radiation of heat.

(*v*) The plant where nitrogen is taken from the air by the liquid-air process is many times larger than any similar plant ever constructed. In this plant nitrogen testing 99.9 per cent pure is secured in volumes aggregating 500,000 cubic feet every hour. The oxygen and a small part of the nitrogen are returned to the atmosphere.

(*w*) The oven building contains 1,536 ovens in which the nitrogen is fixed or caught in the carbide. Each oven is about 3 feet in diameter and 5 feet deep, holding approximately 1,600 pounds of carbide. This charge is heated, electrically, to white heat, and the nitrogen from another building is forced through it and is caught. The product from these kilns is cyanamid or lime nitrogen and contains 21 per cent of fixed nitrogen.

(*x*) The autoclave building contains 56 cylindrical steel autoclaves, which are steam-tight, vertical boilers with agitators to stir the powdered cyanamid in order to drive off the ammonia gas. Each autoclave holds four tons of the powdered cyanamid, and it takes about an hour and one-half to get the fixed nitrogen out of the cyanamid and into the form of ammonia gas in order later to convert it into ammonium nitrate for military or agricultural purposes.

(*y*) Many smaller buildings, each of which is indispensable in the complete process through which lime, coke, and air must go in order to get nitrates for either explosives or fertilizers, are component parts of the gigantic whole of nitrate plant No. 2. In all there are about 30 buildings as units in this plant.

(*z*) Nitrate plant No. 1 is a much smaller plant than No. 2 and is designed to secure nitrogen from the air and fix it for military or agricultural uses by an entirely different process than the one used in No. 2. It has never operated on a commercial or practical scale but is completely equipped for operation.

COMMENT BY THE COMMITTEE.

The information given above contains some remarkable facts which your committee feels free to comment upon, not in the way of specific recommendations but rather that you may be informed what relation these facts bear to our welfare as citizens and as farmers.

(*a*) That the Wilson Dam contains the possibility of developing a hydroelectric plant far in excess of any yet contemplated in America—with the exception of Niagara Falls—is evidenced by the fact that it will maintain a head of water almost 100 feet high and has the volume of flow referred to in II (*a*), whereas the great Keokuk Dam across the Mississippi River holds only a 40-foot head of water.

(*b*) There seems to have been no graft in the Government's acquisition of the land which will be inundated. The average price paid for this land seems to your committee to be entirely within reason; furthermore, there appears no likelihood of litigation subsequent to such inundation.

(*c*) Millions of dollars, undoubtedly, have been spent in the preparatory work which necessarily had to precede actual construction. Now that all this preparatory work has been done and paid for, it is the thought of your committee that legislation and appropriation should be provided for in Congress to avoid the loss of all this preliminary construction.

(*d*) The engineers in charge of construction work on the Wilson Dam state that although only about one-third of the permanent work has been completed, more than one-third of the total expense has been met on account of the cost of the preparatory work.

(*e*) Your committee is impressed with the necessity for a resumption of building operations on the dam, which were discontinued in April on account of a lack of appropriations.

(*f*) It is needless to state that the great steam plant which is capable of running all of nitrate plant No. 2 was built only to operate the plant until the Wilson Dam could be completed and furnish a cheaper power. The steam plant should now be considered as an auxiliary power plant to the hydraulic development, as nitrates can be made much cheaper with hydraulic rather than with steam power.

(*g*) Your committee desires you to remember that in the fixation of atmospheric nitrogen in the lime-nitrogen process some substance must be made that will soak up nitrogen somewhat as a sponge does water. Carbide, which is made by fusing lime and coke in an electric furnace, is the material used in nitrate plant No. 2. However, it is a chemical reaction that takes place, and not a physical one.

III. Availability of Nitrate Plant No. 2 for Manufacturing Fertilizers.

It is a generally recognized fact that up to a certain point the manufacturing of nitrates for military or for agricultural uses follows a common course. This is true whether the nitrates are atmospherically fixed or obtained otherwheres. In this report, of course, we are primarily concerned with the form of nitrates which is secured from the air, as the other forms have been longer used and more fully understood. There are three great sources of commercially used nitrates. First in tonnage is Chilean nitrate; then the ammonia secured as a by-product from coke ovens; and finally atmospheric nitrogen, which until recent years has been a dream of scientists, but is now very practical and is rapidly forging ahead in the tonnage produced. To these three may be added a fourth source, which is the use of legumes in fixing atmospheric nitrogen, and which farmers are coming more and more to value. This is nature's way of taking fertilizer out of the air and placing it in the soil in tubercules on the roots of legumes. Man has recently learned how to do the same thing mechanically and chemically.

In the fixation of atmospheric nitrogen, either for military or agricultural purposes, several steps are necessary before we have a commercial product. In order that there may be a clear understanding of the process used in nitrate plant No. 2 at Muscle Shoals, an effort will be made herewith to detail in nontechnical and comprehendable terms the various stages in the process.

1. Lime rock is burned into lime and mixed with dried coke which has been finely powdered.

2. This mixture is melted together in electric furnaces which generate a heat exceeding 1,500° C. The product of these furnaces is known as carbide, which is the same product that is used in all acetylene lighting plants.

3. The carbide, after cooling, is ground through various machines until most of it will pass through a screen having 200 meshes to the square inch.

4. Air being formed of a mixture of nitrogen and oxygen, and only the nitrogen being needed for this process, the two gases are separated, first, by compressing and cooling the air until it becomes liquid, then distilling this liquid to separate the two gases, much in the same way that alcohol is separated from water in making spirituous liquors.

5. This nitrogen is then blown gently through ovens, in which the powdered carbide has been heated electrically to a white heat; and the result is that the carbide catches or fixes the nitrogen, in a manner very similar to the "soaking up" of water sprayed into a box of sand.

6. Now we have lime nitrogen (cyanamid), which is the first form of air-fixed nitrogen either for military or agricultural uses. It carries about 21 per cent fixed nitrogen and is directly available as a fertilizer but has some limitations in its use.

7. The lime nitrogen after being ground to a fine powder is treated to a bath of steam and a weak alkali under pressure of about 150 pounds to the square inch. This causes a gas to be formed, known as ammonia.

8. About half of this ammonia gas is mixed with air, and by being passed through an electrically heated platinum gauze the gas-air is heated to 600° C. When this superheated mixture is suddenly subjected to a low temperature it begins to change to nitric acid, much as the moisture in a cloud condenses into rain drops when struck by a cooling wind. The cooling process is continued until all the ammonia is changed into a 50 per cent nitric acid.

9. The other half of the ammonia gas is then forced into tanks which hold the nitric acid and is absorbed by the acid. This gives us ammonium nitrate in liquid form. This process is comparable to the method of making carbonated water in which a gas is forced into the water and held there.

10. This liquid ammonium nitrate is subjected to heat, and evaporation removes all the liquid, leaving a pure ammonium nitrate, which, when cooled in revolving pans in which there are stirring paddles, gives us a grained powder not unlike sand in appearance and which carries 35 per cent of nitrogen. We all know that sorghum, when subjected to the proper heat for too long a time,

crystallizes into sugar. A very similar crystallization process happens in the case of this liquid ammonium nitrate.

11. If sulphuric acid is substituted for nitric acid in the process described under paragraph 10, we will have ammonium sulphate instead of ammonium nitrate. Sulphuric acid to use in the production of ammonium sulphate can be purchased or made in the plant. When the Government plant at Nashville, Tenn., for the production of explosives was disposed of at the close of the war part of its equipment for the production of sulphuric acid was retained and shipped to Muscle Shoals and is now available for installation at nitrate plant No. 2 if it is found necessary to do so.

12. Either one of the above-named products is readily adaptable to fertilizer uses.

COMMENT BY THE COMMITTEE.

1. Your committee desires to suggest that in dealing with the whole proposition of manufacturing nitrates for military or agricultural uses the location of the plants is of prime importance. Nitrate plant No. 2 at Muscle Shoals, in connection with the Wilson Dam, has the following remarkable list of advantages in location:

(*a*) Practically inexhaustible quarries of the purest lime rock are easily accessible. The present quarries are only 28 miles removed.

(*b*) Coke, which combined with burned lime in the early stages of the process used at nitrate plant No. 2, is produced in large quantities in the coal fields of Tennessee and can be transported quickly to Muscle Shoals. The greatest coke-coal beds in the Nation lie between the Tennessee and the Ohio Rivers.

(*c*) The greatest deposits of raw phosphate rock in America are in Tennessee, which adds the possibility of using phosphate rock in electric furnaces and producing phosphoric acid and available phosphates as well as nitrates.

(*d*) Coal beds of immense proportions almost surround Muscle Shoals, all within easy hauling distance. Great quantities of coal are needed to burn the lime rock as well as to operate the great steam power plant as an auxiliary to the water power. There seems to be no need of nitrate plant No. 2 producing its own coke, as this product can be purchased economically from coke ovens already operating. The same statement may be true relative to sulphuric acid in making ammonium sulphate.

(*e*) The Tennessee River is a navigable stream and so offers cheap transportation, both for supplies needed at the plant and for products shipped therefrom, to the whole Mississippi, Missouri, and Ohio River systems.

(*f*) Muscle Shoals is nearly in the heart of the great fertilizer-using section of our Nation, but is also situated agriculturally somewhat near the center of the whole country.

(*g*) Muscle Shoals is far enough inland to be considered in the safety zone for war time. That is, if an invading army should land on the Gulf shore the distance to Muscle Shoals is so great that this plant would be comparatively safe and could continue making nitrates to repulse the enemy.

(*h*) With the immense water-power development incident to the completion of the Wilson Dam there is the certainty that much of the electrical power can be sold for industrial uses other than operating nitrate plant No. 2. Within easy transmission distances of Muscle Shoals lie the metropolitan centers of Birmingham, Ala.; Memphis and Chattanooga, Tenn., not to mention others of considerable importance. The great coal operations of this territory may be expected to become users of electric current, too.

2. It will be permitted the committee to remark that the cheapness of any fertilizer depends to a very large extent upon the ease and simplicity with which it is manufactured, and that the more frequently it is handled or treated in the process of manufacturing the more expensive it becomes. Consequently the cheapest fertilizer which is capable of being produced at Muscle Shoals is the lime-nitrogen (cyanamid). This product is a good nitrogenous fertilizer when used by itself, but carries much more nitrogen than the usual mixed fertilizer and must be used carefully. When only a nitrogenous fertilizer is needed lime-nitrogen gives as good results as are secured by any other form of nitrogen, but is somewhat slower in its availability. However, in mixed fertilizers the lime-nitrogen, if used in too great quantities, causes the phosphates to become less soluble, and hence less available as plant food on account of the lime reacting unfavorably on the phosphates. It is fair to state, though, that the chemists seem nearly to have a treatment for the lime-nitrogen which

will remove this undesirable characteristic. It is entirely to be expected that with further experiment these difficulties will be entirely overcome.

When lime-nitrogen is advanced through its subsequent stages and is changed into ammonia gas, then to nitric acid, and finally into ammonium nitrate or ammonium sulphate, it can be readily used, either alone or in mixed fertilizers. All these later stages, as above stated, increase the cost of the nitrogen content of whatever product is manufactured.

3. In this report but little mention will be made of nitrate plant No. 1. The process designed to be used in that plant is entirely different from the one in No. 2, and, although it is comparatively a simple chemical process, the mechanical difficulties have been such as to offer great difficulties to a practical operation of the plant. Your committee desires the permission to suggest, however, that its faith in the ability of our chemists is so great as to justify us in holding nitrate plant No. 1 intact ready to operate when the difficulties shall have been overcome. Accordingly you will note in one of the two definite recommendations at the end of this report that your committee has incorporated both nitrate plants in the same recommendation.

IV. NECESSITY FOR AN INCREASED NITROGEN SUPPLY.

The world's supply of nitrogen comes from two great classifications—the organic and the inorganic. The organic nitrogen is supplied by such commodities as tankage, dried blood, and cottonseed meal. These products are rapidly being transferred from the fertilizer field to the stock-feeding industry. It has developed that the feeder of live stock can compete in the purchase of these products much to the disadvantage of the feeder of soils who desires to use them as fertilizers. Their use as fertilizers is rapidly ceasing, but a constant increase is noted for these products as stock food. So we may as well not consider these organic nitrogenous products in summing up our available fertilizer supply. Their use is comparatively negligible as plant food.

Our inorganic nitrogen comes almost wholly from three sources. First in importance, as measured by the tonnage used, is the Chilean nitrates. Next in tonnage produced comes the coke ovens, from which a form of nitrogen is secured as a by-product. In recent years a third source has been developed in the fixation of atmospheric nitrogen. The development of methods, especially the lime nitrogen or cyanamid process for fixing, or capturing, the nitrogen that is in the air, has assumed such importance in recent years, not alone in our country, but in several other nations, as to justify the statement that the world's increasing demand for nitrates in industry for military purposes and in agriculture will be met largely by the fixation of atmospheric nitrogen.

A review of the present situation as regards the Chilean nitrates and the by-product from the coke ovens will serve to confirm the statement made. In the period between 1913 and 1920 the production of Chilean nitrates increased only about 28 per cent, although the whole world was seeking nitrogen. This may be accounted for partly by the falling off of the nitrate content in the Chilean product, which requires the handling of a much larger tonnage of the raw material to satisfy the world needs. The available nitrogen in the Chilean product has dropped from nearly 30 per cent, where it was in former years, to less than 20 per cent now. This signifies, no doubt, that the best beds of the nitrate deposits have been used. Also, it may seem that inaccessibility of the remaining beds makes production much slower than was formerly the case. Whereas, a laborer years ago was able to produce more than 70 tons per year, now the same laborer is producing approximately 55 tons.

The production of nitrogen as a by-product from coke ovens is altogether dependent upon the growth of the steel industry. Coke is produced primarily as an adjunct to the production of steel, and can not profitably be produced in quantities in excess of the requirements of the steel furnaces. In other words, it can not be produced simply for its by-products, which are nitrogen, tar, gas, and oil. Somewhat more than half the coke of our country is produced in ovens which can save the by-products, but the old-fashioned beehive coke ovens are not being superceded, although they produce nothing but the coke and do not save the by-products. This may point to the conclusion that as more ovens are built, or old ones remodeled, the determining factor in their operation is the production of coke and not the by-products. So we should not expect the coke industry to lead out in nitrogenous production when its development is dependent upon the growth of another industry—steel. The increase

in the production of nitrogen from these coke ovens in the period between 1913 and 1920 was slightly more than 19 per cent.

But the statistics, as usually given, representing ammonium-sulphate production from the by-product coke ovens do not state the exact conditions from the fertilizer standpoint. To look at the statistics one might think that in 1918, for instance, there were produced 408,237 tons of ammonium sulphate available for use in agriculture. This is by no means the case, for this figure represents the amount of sulphate of ammonia that would have been produced in 1918 if all the ammonia in all forms that was obtained from the by-product ovens had been made into ammonium sulphate. The facts are that nearly half of this amount given as ammonium sulphate is never available for agriculture. In 1918 the actual production of ammonium sulphate was 218,194 tons, according to the United States Geological Survey report. As a general average, 45 per cent of the so-called ammonium sulphate represents simply the production of ammonia in gaseous form, which is absorbed in water and is sold as aqua ammonia for refrigeration and other industrial and domestic purposes, and is never made into ammonium sulphate at all. The demand for ammonia in this form is met, first, by the by-product coke ovens, and what is left after these industries have been provided for, is converted into ammonium sulphate and sold as a fertilizer ingredient. In other words, the ammonia product of the coke ovens seeks the refrigeration rather than the fertilizer market.

In opposition to the slow growth of nitrogen production in the Chilean nitrates, and in coke ovens, it is significant to note that for the years 1913 to 1920 the production of atmospherically fixed nitrogen enjoyed a growth of approximately 783 per cent. It is also worthy of note that the world took all this nitrogen and asked for more. We may confidently expect the use of nitrogen in fertilizers, in ammunition, and in industry to constantly expand. This expansion will be measured largely by the price of the nitrogen sold. If it can be manufactured and placed on the markets cheaply, and cease to be—as it now is—the determining factor in the price of all mixed fertilizers, we may look forward to a multiplied use of nitrogen. Farmers know that their operations are rapidly depleting our soil of nitrogen, and they willingly would replace this ingredient in the soil if it could be had reasonably. A reasonable estimate of the annual nitrogenous loss from our soils will be between three and four million tons, to balance which we had in 1920 a total world's production of nitrogen of only one and one-half million tons, not all of which was available for us, of course. To feed the world and to make at least a temporary profit in farming, we must continue to mine our soils until we can mine the air and take from it cheap nitrogen.

In view of the probable insufficient supplies of nitrogen from Chile and from the by-product coke ovens, it is somewhat alarming to know that our consumption of nitrogen is doubling every decade. Whether this increase can be maintained—and it can be accelerated under the most favorable conditions for producing and marketing cheap nitrogen—depends almost wholly upon the development of the air-fixation industry.

COMMENT BY THE COMMITTEE.

By way of suggesting conclusions your committee calls attention to these pertinent facts:

(*a*) That the world is running behind in the production of nitrogen.

(*b*) That the price of Chilean nitrate is increasing as its supply becomes more inadequate.

(*c*) That the United States alone paid in 1919, $85,000,000 for Chilean nitrate.

(*d*) That the United States has paid, including 1919, altogether for Chilean nitrate, plus freight, insurance, etc., approximately $800,000,000.

(*e*) That this vast expenditure justifies us in seeking other sources of nitrogen.

(*f*) That nitrogen either by itself or in mixed fertilizers should be placed on the market at a valuation which is not so nearly prohibitory of its use.

(*g*) That to secure a lessened valuation in nitrogen it must be taken from the air, where it is inexhaustible.

(*h*) That since only about 55 per cent of our estimated total consumption would be produced by our own nitrogen plants of all descriptions, including nitrate plant No. 2, there is only a remote possibility of overproduction for the present decade.

(*i*) That the by-product coke ovens are not to be considered as primarily producers of fertilizer ingredients, because, first, their production depends upon the steel industry; and, secondly, their products are sold as much as possible in the form of aqua-ammonia, and the remainder only as ammonium sulphate.

V. Costs and Estimates.

A. NITRATE PLANT NO. 1.

3 large buildings	$7,195,496.71
13 smaller buildings	2,270,413.97
Railways, land, walks, village, etc	3,788,661.05
Total	13,254,571.73

B. NITRATE PLANT NO. 2.

Approximate total expenditures		$69,026,833.43
Overhead, Air Nitrates Corporation	$3,504,628.14	
Construction fees, Air Nitrates Corporation, including unpaid balance	1,500,000.00	
Temporary buildings	4,260,550.00	
Chemical plant	37,842,899.98	
Power plant	10,436,337.05	
Land for plant reservation site	237,711.00	
Permanent housing	2,767,837.36	
Reservation site and public works	1,427,162.47	
Community and commissary activities	$9,411,528.79	
Less cash revenues (miscellaneous and commissary)	4,922,799.69	
	4,488,749.10	
Quarry	715,494.65	
Operation	1,860,463.60	
Total		69,026,833.43
Less operating expenditure		1,860,463.60
Construction expenditure		67,166,369.83

C. THE WILSON DAM.

Various estimates have been offered as to the total cost of this dam, but as conditions relative to cost are changing so rapidly it is impossible to secure great accuracy. Two estimates are herewith submitted. The first one is based on conditions as they were in 1919, and is being held on that level in order to be definitely sure that the final cost can not exceed the figures given. The second estimate is based on conditions as they were in 1916, but there has been added in each item a 100 per cent increase, in the hope that such an arbitrary increase will approximately represent the difference in the cost factors in the year 1916 and at the present time.

(A.)

Allotted for construction, as per national defense act of 1916		$13,160,000.00
Transferred from armament and fortification fund June, 1910		4,000,000.00
Total allotments to date		17,160,000.00
Total approximate expenditures and commitments to date		16,650,000.00
Amount to be asked from Congress		10,000,000.00
Approximate total cost (based on 1919 conditions)	$50,000,000.00	
Amount properly allotted to navigation purposes	4,500,000.00	
Net cost for power purposes		45,500,000.00
Production cost, one horsepower per year (based on average horsepower 300,000 and a 10 per cent interest and operating expense)		15.00

(B.)

General engineering and offices expenses	$2,275,000.00
Camps, general plant, railroad constructions	2,212,000.00
The dam proper	4,127,000.00
Locks	1,064,000.06
Substructure of powerhouse and tailrace	2,000,000.00
Flowage damages	350,000.00
Road changes	30,000.00
Clearing	76,000.00
Head gates	135,000.00
Racks	68,000.00
Cranes	50,000.00
Generating equipment	4,200,000.00
Cables and wiring	150,000.00
100 per cent increase	16,737,000.00
Total	16,737,000.00
Total cost of dam	33,474,000.00
Amount properly allotted to navigation purposes and not useful for power	4,500,000.00
Cost of dam for power purposes	28,974,000.00
Production cost of 1 horsepower per year (based on average horsepower 300,000 and a 10 per cent interest and operating expense)	9.66

NOTE.—One horsepower at Niagara Falls sells at $17 per year.

D. MANUFACTURING COST OF CALCIUM CYANAMID (LIME-NITROGEN) AT UNITED STATES NITRATE PLANT NO. 2.

[Based on a two-weeks' run with steam power.]

Item.	Two weeks' test at approximately 20 per cent capacity, production, 1,450 tons; cost per ton of lime nitrogen.			Estimated cost of manufacture at 100 per cent capacity, production 222,200 tons per year.			
	Quantity per ton of lime nitrogen.	Unit cost.	Cost per ton of lime nitrogen.	Quantity per year.	Unit cost.	Total yearly cost	Cost per ton of lime nitrogen.
Limestone.....tons..	2	$2.25	$4.50	388,900	$1.25	$486,000	$2.19
Coke.....do....	.54	9.75	5.26	120,000	6.00	720,000	3.24
Coal.....do....	.26	4.25	1.10	46,700	4.00	187,000	.84
Electrodes.....pounds..	44	.06	2.64	8,400,000	.05	420,000	1.89
Power.....kilowatt hours..	2,765	.00738	20.40	624,000,000	.0042	2,496,000	[1] 11.23
Miscellaneous material and supplies			2.75			591,000	2.66
Labor			11.35			1,600,000	7.20
Total			48.00			6,500,000	29.25
Overhead			13.85			411,000	1.85
Total			61.85			6,911,000	31.10
Royalties per present contract			2.56			1,533,000	6.90
Operating fee per present contract			3.12				
Total			67.53			8,444,000	38.00

[1] When the Wilson Dam is complete, the cheaper water power will be available. If we assume this to cost $0.00075 per kilowatt hour, the cost of cyanamid fertilizer will be reduced to $30.85 per ton. It should be noted that the power cost of $0.00075 per kilowatt hour, used in this and the following tables is not as large as will be placed upon the power which is sold, but represents approximately what may fairly be charged against nitrate plants for power.

One ton of lime nitrogen when oiled and hydrated produces 1.10 tons of commercial cyanamid.

Cost of 1 ton commercial cyanamid ($38) divided by 1.10	$34.55
Cost of oil and oiling	.75
Bagging	1.75
Research and main office	2.10
Total, commercial cyanamid	39.15

E. MANUFACTURING COST OF AMMONIUM NITRATE AT UNITED STATES NITRATE PLANT NO. 2.

[Based on a two-weeks' run with steam power.]

Item.	Two weeks' test at approximately 20 per cent capacity, production 950 tons; cost per ton of nitrate.			Estimated cost of manufacture with lime-nitrogen plant running 100 per cent capacity; 20 per cent of the product being converted into 22,000 tons of nitrate.			
	Quantity per ton of ammonium nitrate.	Unit cost.	Cost per ton of ammonium nitrate.	Quantity per year.	Unit cost.	Total yearly cost.	Cost per ton of nitrate.
Limestone.....tons..	4.04	$2.25	$9.08	77,780	$1.25	$97,200	$4.42
Coke.....do....	1.09	9.75	10.62	24,000	6.00	144,000	6.54
Coal.....do....	.53	4.25	2.22	9,340	4.00	37,360	1.70
Electrodes.....pounds..	89	.06	5.34	1,680,000	.05	84,000	3.82
Power.....kilowatt hours..	5,945	.00738	43.87	133,270,000	.004	533,080	24.22
Miscellaneous material and supplies			11.36			266,000	12.08
Labor			34.73			509,000	23.14
Total			117.22			1,670,640	75.92
Overhead			40.38			100,000	4.56
Total			157.60			1,770,640	80.48
Royalties per present contract			6.27			254,000	11.55
Operating fee			5.00				
Total			168.87			2,024,640	92.03
Bagging							2.00
Research and main office							5.63
Total							99.66

NOTE.—When the Wilson Dam is complete, the cheaper water power will be available. If we assume this to cost $0.00075 per kilowatt hour, the cost of nitrate will be reduced to $80.05 per ton.

F. MANUFACTURING COST OF AMMONIUM SULPHATE AT UNITED STATES NITRATE PLANT NO. 2.

Estimated cost of manufacture with lime nitrogen plant running 100 per cent capacity; 40 per cent of the product being converted into 86,000 tons of sulphate.

[Based on a two-weeks' run with steam power.]

Item.	Quantity per year.	Unit cost.	Total yearly cost.	Cost per ton of sulphate.
Limestone ..... tons	155,560	$1.25	$194,450	$2.27
Coke ..... do	48,000	2.00	288,000	3.35
Coal ..... do	18,680	4.00	74,720	.87
Electrodes ..... pounds	3,360,000	0.05	168,000	1.96
Power ..... kilowatt-hour	255,482,400	0.004	1,022,000	11.89
Sulphuric acid	82,600	10.00	826,000	9.60
Miscellaneous materials and supplies			447,500	5.20
Labor			1,033,000	12.01
Total			4,053,670	47.15
Overhead			198,000	2.30
Total			4,251,670	49.45
Royalties per present contract			582,000	6.77
Total for 86,000 tons of ammonium sulphate			4,833,670	56.22
Assuming 65 per cent would be shipped in bulk, the cost of bagging the remainder prorated is estimated at				.50
Research and main office				3.41
Total				60.13

NOTE.—When the Wilson Dam is complete, the cheaper water power will be available. If we assume this to cost $0.00075 per kilowatt-hour, the cost of sulphate will be reduced to $50.58 per ton.

G. ESTIMATED COST (EXCLUSIVE OF INTEREST CHARGES) OF PRODUCING PHOSPHORIC ACID BY THE ELECTRIC-FURNACE METHOD, ASSUMING POWER AT $25 PER HORSEPOWER YEAR.

Item.	Quantity (tons) "mine run."	Cost of material per ton, Tennessee.	Cost per ton of acid (P_2O_5) raw rock.	Quantity (tons) "washed."	Cost of material per ton, Tennessee.	Cost per ton of acid (P_2O_5) raw rock.
Phosphate rock				3.32	$7.00	$22.24
Phosphate matrix	3.73	$1.60	$5.40			
Sand	1.50	.50	.75	1.50	.50	.75
Coke	.75	4.50	3.37	.75	4.50	3.37
Operating expenses: Electrodes, $2.13; labor, $4.45; power, $44.01			50.59			50.59
Total cost per ton			60.11			76.95
Total cost per pound			.03+			.04—

NOTE.—When we assume power to cost $0.00075 per kilowatt hour ($0.0005625 per horsepower hour) and use this cheaper hydroelectric power, the power item will stand at $4.92 per horsepower year instead of at $25 as is used in the above table, which is approximately the commercial rate for power. This will reduce the operating expense for power as estimated above from $44.01 to $8.66 and give a total cost per ton for "mine run" of $35.35 and for "washed" of $41.60; or, per pound of 0.01767 and 0.0208, respectively

The estimates in the table given above are all based on a ton production of P_2O_5. To transfer these estimates into terms of 16 per cent acid phosphate it is necessary to remember that there are only 320 pounds of P_2O_5 in a ton of acid phosphate. By taking the pound costs in the table and multiplying them by 320 we ascertain the cost of 16 per cent acid phosphate, which will give us for the "mine run" $9.60 and for the "washed" $12.80. With power from the hydroelectric installation, these prices further reduce to $5.65 and $6.65 respectively per ton of acid phosphate.

The figures in the above table and notes constitute what will doubtless be a very spectacular development relative to fertilizer prices.

H. ESTIMATED SUPPLY AND CONSUMPTION OF NITROGEN FOR 1924 AND 1930, IN TONS OF PURE NITROGEN.

	1924	1930
Estimated peace-time consumption in—		
Agriculture	172,000	285,000
Industries	120,000	150,000
Military explosives	2,500	3,000
Total consumption	294,500	438,000
Estimated domestic supply from—		
By-product coke ovens	122,500	159,500
Privately owned fixed-nitrogen plants		25,000
Total domestic supply	122,500	184,500
Deficiency in domestic supply if Government plants do not operate	172,000	353,500
Estimated supply from Government fixed-nitrogen plants	43,000	55,000
Deficiency in domestic supply if Government plants operate	127,000	198,500
Estimated imports necessary:		
Canadian lime-nitrogen	15,000	15,000
Chilean or European nitrate, if Government plants not operated	157,000	238,000
Chilean or European nitrate, if Government plants operated	112,000	183,500
Proportion of total consumption furnished by domestic supply:		
If Government plants not operated ..... per cent	41.6	42.2
If Government plants operated ..... do	56.9	54.7

I. NITROGEN IN RED CLOVER AND COWPEAS.

Crop.	Condition of crop.	Nitrogen in pounds per acre.			Fixed in soil per acre.	References.
		Whole plant.	From air.	Roots and stubble.		
1	2	3	4	5	6	7
Red clover	Mature	103.00	68.60	33.20	*1.20	Delaware, A. E. S.
Do	do	103.40	68.90	40.30	†5.80	New York, A. E. S.
Mammoth clover	do	146.00	97.30	78.40	†29.70	Do.
Cowpea	do	69.70	46.40	25.30	†2.00	Mississippi, U. S D. A.
Do	do	112.90	75.20	16.70	*21.00	Indiana, A. E. S.
Total		535.00	356.40	193.90	†15.30	

The sum of 4 and 5 when compared to 3 gives the amount of nitrogen fixed in the soil or taken from the soil in growing the plant.

In 6 the sign (*) means the pounds of nitrogen fixed in the soil and (†) means what has been taken from the soil.

It seems that not all clover and cowpea fields enrich the soil by chemical action.

No figures are available in this connection relative to alfalfa.

The average yield per acre of alfalfa hay in the United States for 1920 was 2.74 tons. This hay analyzes 2.3 per cent of nitrogen, which gives us 0.063 tons of nitrogen, or 126 pounds in each ton of alfalfa hay. How much of this is drawn from the air and how much from the soil has not yet been definitely determined.

The average yield per acre of red clover hay in the United States for 1920 was 1.46 tons. This hay analyzes 2 per cent of nitrogen, which gives us 0.029 tons of nitrogen, or 58 pounds, in each ton of red clover hay. It would seem, from the above table that many red clover fields are drawing upon the nitrogen reserves of the soil instead of adding thereto.

J. WATER POWER AT MUSCLE SHOALS.

[Based on flowage records of 19 years.]

Horsepower in stream.	Months available.	Horsepower used and wasetd with—					
		4 power units.		10 power units.		18 power units.	
		Used.	Wasted.	Used.	Wasted.	Used.	Wasted.
100,000	12	100,000		100,000		100,000	0
240,000	9	120,000	120,000	240,000		240,000	0
360,000	7	120,000	240,000	336,000	24,000	360,000	0
480,000	5½	120,000	360,000	336,000	144,000	480,000	0
600,000	4	120,000	480,000	336,000	264,000	600,000	0

NOTE.—The first four units are to be of 30,000 horsepower, but all others are to be rated at 36,000 horsepower.

K. ROYALTIES.

Product.	Royalty to—		Total per ton.
	Air Reduction Co.	American Cyanamid Co.	
Commercial lime-nitrogen	$0.522	$5.753	$6.275
Ammonium nitrate	1.16	10.395	11.555
Ammonium sulphate	.594	6.176	6.770

NOTE.—Although most of the patent rights on methods and devices for fixing atmospheric nitrogen are owned by the American Cyanamid Co., some are owned by the American Reduction Co. This makes it necessary to pay two royalties. These royalties are now subject, however, to arbitration.

L. MAINTENANCE OR STAND-BY EXPENSE OF NITRATE PLANTS NOS. 1 AND 2.

	July 1, 1919, to June 30, 1920.	July 1, 1920, to June 30, 1921.	July 1, 1921, to June 30, 1922.[1]
Nitrate plant No. 1	$171,605.58	$80,500.00	$60,000.00
Nitrate plant No. 2	472,642.63	179,476.20	132,000.00
It has been stated by War Department officers that the daily operation of these plants is equivalent to a storage of 150,000 tons of nitrate of soda for explosives. At $50 per ton this represents an investment on the part of the Government of $7,500,000, which, at 5 per cent interest annually, amounts to			375,000.00
Storage on 150,000 tons annually (estimated by War Department officials at $129,000)			100,000.00
Total for 1922[1]			667,000.00

[1] Estimated.

M. WORLD'S PRODUCTION OF MIXED INORGANIC NITROGEN.

[In metric tons of nitrogen.]

Product.	1913	1917	1920	Per cent of increase from 1913–1917.
Chilean nitrate	390,000	392,000	500,000	28
By-product from coke ovens	343,000	364,000	410,000	19
Atmospheric nitrogen (arc, Haber, cyanamid)	85,000	340,000	665,000	783

N. COMPARATIVE PRICES.

(In tons.)

Products.	Muscle Shoals.		Wholesale 1920 prices.	
	Steam power.	Water power.	Imports.	Domestic.
Lime nitrogen (21 per cent)	$39.15	$30.85	$65.36	.....
Ammonium nitrate (35 per cent)	99.66	80.05	(1)	.....
Ammonium sulphate (21 per cent)	60.13	50.58	132.67	$110.00
Acid phosphate (16 per cent)	.....	.....	.....	19.50
From mine run	9.60	5.65	.....	.....
From washed	12.80	6.65	.....	.....
Nitrate of soda (Chilean nitrate, 17 per cent)	.....	.....	68.50	.....

[1] Not quoted as fertilizer.

NOTE.—All wholesale prices here quoted are taken from the 1920 Yearbook of the Oil, Paint and Drug Reporter.

VI. THE REPORT OF THE NITROGEN PRODUCTS COMMITTEE OF THE MINISTRY OF MUNITIONS OF WAR OF THE BRITISH GOVERNMENT.

The greatest contribution to the literature relating to the fixation of atmospheric nitrogen that is now available is the report of the committee of eminent Englishmen, 24 in number, who were appointed in June, 1916, to investigate fully all the scientific and industrial problems incident to the creation of a nitrogen-fixing industry in the Empire. This report contains 36 large pages, and is the result of months of painstaking work on the part of the committee. The final report of this committee was made in May, 1919.

It will be of decided value in our study of the Muscle Shoals project to know what conclusions were reached by the nitrogen products committee. Consequently, space in this report is being taken for several quotations from the English document.

"(A) A large addition to the home output of ammonium sulphate, coupled with the increasing competition of synthetic nitrogen products, would undoubtedly cause a reduction in its market price, and this would be of advantage to agriculture and to the export trade.

"(B) It appears probable that undertakings of this character would have to receive the support of the Government or be carried out entirely as national projects.

"(C) The main characteristics of the cyanamid process are:

"(*a*) The relatively small power requirements per unit fixed as contrasted to the arc process.

"(*b*) The direct production of a solid nitrogenous fertilizer (lime nitrogen), thus avoiding the costs incurred in all the other established synthetic processes for converting liquid products into a solid, marketable form.

"(*c*) The production of a cheaper marketable form of combined nitrogen than is obtainable by any other fixation process.

"(*d*) Its great adaptability as regards the products obtainable.

"(D) There seems no reason why manufacture both of carbide and also of calcium cyanamid (lime nitrogen), if laid out on a large scale, should not be successful in this country. There are blocks of undeveloped water power in Scotland of sufficient size for the operation of a large factory.

"(E) The market price of a metric ton of combined nitrogen in the United Kingdom prior to the war varied from 66 pounds to 67 pounds (in the form of ammonium sulphate and Chile nitrate, respectively).

"(F) The synthetic processes can produce a metric ton of combined nitrogen at a cost at the factory of from 20 pounds to 30 pounds.

"(G) The synthetic processes can produce a metric ton of concentrated (93 to 96 per cent) nitric acid for about half the cost of the Chile nitrate retort process.

"(H) The synthetic processes can produce a metric ton of combined nitrogen ready for the fertilizer market, as cyanamid ammonium sulphate, at a cost at the factory of about or even less than one-half the prewar market price of combined nitrogen in the United Kingdom.

"(I) A large proportion of the synthetic plant would find an application under peace conditions for the manufacture of nitrogenous fertilizers, either for home consumption or for exportation.

"(J) As compared with the retort process (used in connection with the Chile nitrate) the saving in the running costs over a period of two years would probably cover the initial capital outlay.

"(K) Dealing broadly with the postwar demand, the requirements of agriculture are certain to be much larger than formerly, the imperative need for maintaining and extending the world's production of food, and the vital importance of combined nitrogen for this purpose, having emerged as the salient lessons of the later stages of the war.

"(L) The consumption of combined nitrogen practically doubled in the 10 years before the war. When account is taken of the relative areas under cultivation in the food-producing countries of the world, of the prewar consumption of nitrogenous fertilizers in the most progressive of the agricultural countries, and of the corresponding consumption in the remaining countries, it is abundantly clear that the quantities of nitrogenous manures employed were in many cases below the most advantageous or profitable level. The difficulties experienced during the war period in obtaining supplies have already provided a salutary lesson as to the importance of fertilization, and the resulting wider recognition of the value of fertilizers will lead to an increase in the demand

for nitrogenous manures in countries where the consumption has hitherto been very small in proportion to the area under cultivation. In the opinion of the committee the provision of a really cheap supply of fixed nitrogen would lead to a greatly extended consumption of nitrogenous fertilizer.

"(M) There will be also an increased industrial demand for fixed nitrogen. Nevertheless, the total requirements for industry are unlikely to amount to more than a relatively small proportion of the demand for agriculture.

"(N) It is evident that the supremacy of the Chile nitrate industry is already being challenged, and the near future holds out the prospect that ammonium sulphate of synthetic nitrogen products may become the dominant factor in the nitrogen market and govern the price of nitrate instead of following it as hitherto.

"(O) The proved utility of Chile nitrate as a fertilizer, however, is such as to insure its position in agriculture for a long time to come, but the extent of the demand under postwar conditions will be largely determined by the price at which the product can be marketed.

"(P) Other things being equal, however, the preponderating factor in determining the future consumption of combined nitrogen in agriculture will be the price at which it is procurable. The possibilities in this direction due to the development of the synthetic nitrogen industry have already been indicated, and in the event of adequate supplies of fixed nitrogen being forthcoming at a price showing even a moderate reduction upon the prewar figure, the committee is strongly of the opinion that there will be a very substantial increase in the consumption. If, however, the price of nitrogen remains at the level of the present controlled price of ammonium sulphate, the demand is likely to be largely determined by factors such as the prices obtainable for agriculture produce.

"(Q) The committee is satisfied that synthetic processes can at the present time be operated in the United Kingdom upon a sound economic basis and that the undoubted advantages enjoyed by such methods will become more pronounced in the course of time as the result of constant efforts towards improvement.

"(R) The committee is emphatically of the opinion that the national interests demand the establishment forthwith of nitrogen fixation and allied processes upon a considerable manufacturing scale.

"(S) It appears that the question of overproduction, which was raised in evidence given before the committee, is hardly likely to constitute a serious factor in the postwar situation.

"(T) A minimum of perhaps 70 per cent of the world's total supplies of nitrate and ammonia nitrogen was utilized in agriculture prior to the war.

"(U) Combined nitrogen (as cyanamid or ammonium sulphate) can be obtained by synthetic processes at a cost, at the factory, which is less than half the market price of combined nitrogen from other sources, prewar conditions being taken as the basis in each case.

"(V) The world's demand for combined nitrogen appears to double every 10 years. The increased production during the war has not been more than the normal rate of increase during peace.

"(W) As far as the United Kingdom is concerned, nitrogen fixation and allied processes will constitute a new 'key' industry. The committee is of the opinion that the initiation and development of the industry will require the active support of the Government."

COMMENT BY THE COMMITTEE.

1. As an aid in the study of the foregoing quotations, it may be well at this point to explain that there are three processes which are used commercially in the fixation of atmospheric nitrogen. Whether or not one or another of these processes enjoys any particular advantages over the others depends altogether upon several factors that enter into the manufacturing of fixed nitrogen. From a practical and agricultural point of view the cost of the operation, and the consequent market price of the commodity, is always the determining factor, so far as the availability for farming uses is concerned. Then again, the power required necessarily enters into the consideration. That process which requires least power, other things being equal, will naturally be the most favored method of fixing nitrogen. Also the proximity of the plant to its sources of raw material, and their availability, will assuredly reflect themselves in the ultimate price.

The three processes referred to frequently by the nitrogen products committee are the arc, the Häber (pronounced Haber), and the cyanamid or lime-nitrogen.

The arc process enjoys the distinction of being simple in that it uses the electric arc to force a combination of nitrogen and oxygen, which combination is caught in water, and after treatment in an alkali produces, as a primary product, nitric acid. Air and water constitute the main raw materials in this process. The handicap of the arc process is that it requires such an expenditure of electrical power. Not more than 4 per cent of the electrical energy used is represented in the nitrogen secured. This makes the arc process almost indefensible except where water power to generate the electrical energy is superabundant. Norway is the only country to use this process commercially, which may be accounted for by a study of her immense water-power resources.

The Häber process is used mainly in Germany and was her principal reliance for nitrogen during the war. This process is based on securing a highly precise mixture of hydrogen and nitrogen, under great pressure and while subjected to terrific heat. If the mixture of these gases is properly maintained the heat and the pressure are easily controlled and the resulting product of fixed nitrogen is secured. But, however, if too much of one gas is admitted or too little of the other, the chemical reaction is highly dangerous in that an explosion occurs. A war incident may be cited in which the American war planes were bombing a German plant of the Häber variety, and although none of the bombs hit the mark the plant was destroyed on account of the workmen fleeing for safety from the bombs and so leaving the gases uncontrolled for half an hour. The principal advantage of this process over any other known process is the small amount of electrical energy required. Approximately only one-fourth the energy is used in this process that is consumed in the lime-nitrogen method, and only about one-sixteenth as much as the arc process demands. Nitrate plant No. 1 was built to use the Häber process, but has never produced fixed nitrogen commercially. The committee desires to suggest, though, that if the Germans can do it, so can we; and to suggest further that the difficulties encountered in the successful application of the well-known chemical laws concerned in this process, are mostly of a mechanical nature now, and we may confidently expect such difficulties to be overcome by the ingenuity of our chemists and mechanics working together.

The cyanamid or lime-nitrogen process has been explained at some length in a preceding division of this report. Suffice it to say that this process, all things considered, is meeting with the most favor all over the world, and is the one used in nitrate plant No. 2.

2. The report of the nitrogen products committee of the British Government accentuates the following conclusions which have been arrived at in this country relative to a development of the nitrogen-fixing industry:

"(*a*) That such an industry would have the effect of reducing prices on the nitrogen content of fertilizers.

"(*b*) That such an industry would have the controlling influence in the determination of market quotations on fertilizers.

"(*c*) That such an industry should receive the support of the Government.

"(*d*) That such an industry, at least with our present knowledge of other processes, should be based on the cyanamid, or lime-nitrogen process.

"(*e*) That the synthetic processes (arc, Häber, cyanamid) may reasonably be expected to produce combined nitrogen at approximately one-half the prewar price.

"(*f*) That the establishment of such an industry, although expensive, might be expected to amortize the original capital cost in a few years by the saving effected in market prices on nitrogen.

"(*g*) That agriculture will use nitrogenous fertilizers in proportions which increase or decrease as the price of nitrogen fluctuates.

"(*h*) That agriculture is the biggest user of nitrogen and therefore is primarily concerned in its production at a price which will permit of its use.

"(*i*) That the Chilean nitrate industry will continue as a factor in the fertilizer market indefinitely, but that we should place ourselves in position to be independent of foreign supplies, both in times of peace and war.

"(*j*) That a plant to manufacture fixed nitrogen can be operated on an economically sound basis.

"(*k*) That the nitrogen industry is not of concern only to one group—as the military, the industrial, the agricultural—nor is it of interest to merely one section of our country. But it is a national problem which challenges the interest of all citizens who have regard for public safety in time of war or who desire that soil conservation and food production be safeguarded in order that agriculture and industry may prosper.

"(*l*) That there is slight danger of an overproduction of nitrogen so long as the price factor is held constant and equable."

VII. Power.

Enough information has been offered in other portions of this report to show that any plant designed for the fixation of atmospheric nitrogen, which is to be placed on the competitive markets, must have readily and steadily available the cheapest form of power. In war times, when low cost of operation was not of prime importance, provided a higher cost expedited our activities, it was possible to contemplate the operation of such plants as nitrate plant No. 2 with power which did not qualify as being the least costly. Accordingly a giant steam plant was installed to run the plant during the interim between the completion of No. 2 and of the Wilson Dam, it being known that the power from the dam could not be available for perhaps three years after the plant began production. Nitrogen production by steam power is, of course, more costly than by water power, which is true of any other industry that can be hydroelectrified.

In peace times the successful and economical operation of nitrate plant No. 2 for the production of fertilizers depends almost wholly upon the completion of the hydroelectric plant in connection with the Wilson Dam. The whole proposition at Muscle Shoals revolves around the item of cheap power. Without this cheap power it is hardly possible to hope that the production of nitrogen will be secured at a figure low enough to materially affect the market price of fertilizers. All estimates, data, and reports from every country point significantly to hydroelectric power as being the determining factor in the manufacturing of atmospheric nitrogen. All other competitive factors, such as the supply of raw materials, their location with regard to the plant, the available market for the product, the chemical and mechanical difficulties, all take places of secondary importance when compared with the one indispensable factor, cheap power.

That there will be an abundance of water power at Muscle Shoals upon the completion of the Wilson Dam is evident when the salient facts connected therewith are considered. The dam, being 100 feet high, will maintain a normal head of 95 feet. The dam and power house are being constructed for the ultimate installation of 18 generating units, each consisting of a water turbine and generator capable of producing 30,000 or 36,000 horsepower. Seventeen of these units are expected to be ready for operation at all times, leaving one out for repairs. These 17 operating units will, therefore, have a total normal output of about 600,000 horsepower. The installation plans call for the immediate placing of only four of these units, which will be ample to operate nitrate plant No. 2, as they will produce 120,000 horsepower. It is worthy of note that the installation of only four units will allow much water to flow over the top of the dam unused during most of the year, whereas if 10 units were installed they could operate to full capacity on an average of half the time, which would justify their installation.

These statements are based on the known flow of the Tennessee River at Muscle Shoals during the period from 1895 to 1914 inclusive, with only one year not considered on account of incompleteness in the records. In all that time, 19 years, the lowest the river ever dropped would have produced 85,000 horsepower; but only 6 years of the 19 recorded show a flow at any time so small as to drop below the 108,000 horsepower required to operate nitrate plant No. 2. In these six years the time in which the flow was less than sufficient to produce this required horsepower amounted to 1.3 per cent of the total time. In these times of low flow the steam plant stands ready as auxiliary power, but to keep the power constant for the four units required to operate No. 2 the steam plant would have to be fired up only 1 day out of 60, on an average.

The records of flowage at Muscle Shoals show that for 9 months in the year there will be approximately 240,000 horsepower, for 7 months in the year 360,000 horsepower, for 5½ months in the year, 480,000 horsepower, and for 4 months in the year 600,000 horsepower, making an average of 300,000 horsepower for the whole year.

If we decide to install only the first four power units and be satisfied to make no use of the remaining power we must be content to see much water spill over the dam. If, however, we desire to harness the full force of the stream we will advocate the placing of the entire battery of 18 horsepower units even if it can not be used throughout all the year. These considerations have given rise to descriptive terms to define the amounts of power available at Muscle Shoals. All that power (approximately 100,000 H. P.) which can be depended upon from day to day, year in and out, as the average lowest power available, is known as primary horsepower. If for one day, or even for one week, as an extraordinary occurrence, the river should drop below this average lowest power line no recognition is given such occurrence in this definition. All other waterpower at Muscle Shoals, from the minimum of 100,000 horsepower to a maximum of 600,000 horsepower, is called secondary power.

As a maximum waterpower development at Muscle Shoals with 18 power units installed we have: One hundred thousand primary horsepower plus 500,000 secondary horsepower. It needs to be remembered that the primary power does not vary—it is constant—but the secondary power is quite variable.

There is a third power available at Muscle Shoals from the steam plant. This classifies neither as primary nor secondary power but should be considered altogether as auxiliary power. Its use should be to suppplement the secondary power as occasion requires.

The immense reserves of secondary power available at Muscle Shoals, not to mention the primary power which is just about ample to operate No. 2 constantly, brings to our attention the necessity of finding a suitable market for such excess power. It may not reasonably be expected that such a market will develop instantly. The history of great hydroelectric plants has been that at first there has been an excess of power for the available market; but that soon the demand for power exceeded the capacity of the plants. So it will undoubtedly be at Muscle Shoals. It would be foolhardy in the extreme, no doubt, to expect at once handsome dividends on our governmental investment at Muscle Shoals other than that which comes to all citizens from a satisfactory supply of nitrogenous products.

It would be unfair though, to estimate the cost per horsepower of the Wilson Dam on any other basis other than one that contemplpates the eventual use of all power classified above. Undoubtedly, either by direct location of factories or by transmission, all the power that the dam is capable of producing will be utilized. Therefore, taking the total estimated cost of the dam with its power equipment but without the navigation features (which will be found in detail in another division of this report) and dividing by the maximum power developed we have the following: Forty-five million five hundred thousand dollars divided by 600,000 equals $75, cost of installing each horsepower if all power were used constantly.

Inasmuch, however, as the primary and secondary power do not stand at that high figure all the time, but maintain a mean average of about 300,000 horsepower, the following equation more nearly represents a fair estimate of installation costs per horsepower. Forty-five million five hundred thousand dollars divided by 300,000 equals $150, cost of installing each horsepower, based on average power developed. It will be seen that the initial capital cost of 1 horsepower at Muscle Shoals compares favorably with the same power when bought in the form of a high-grade gasoline engine for use about the barn or in the shop. It is only fair to state, however, that other estimates as to the cost of the dam, exclusive of navigation features, and which are from dependable sources, reduce the figures above used by fully $15,000,000. The estimate here used was made in 1919 at peak prices and is being adhered to as the highest possible cost of the dam.

Moreover, the cost of operation, per horsepower, after the installation is paid for is far less than that of any other kind of plant, not excepting the most economical steam plant. In this connection the great saving in coal that would be brought about should not be overlooked.

Comment by the Committee.

Recognizing that the power development at Muscle Shoals as represented by the Wilson Dam equals in importance, though not in expense, the building of nitrate plant No. 2; and fully realizing that No. 2 will be greatly handicapped until the dam is completed; and considering that the dam will meet its first

justification for the expense of building it in the operation of No. 2; your committee, therefore, desires most candidly to state its thoughts on the correlation that exists between the two undertakings:

"(*a*) First of all, it is desirable that the Muscle Shoals project pay a reasonable return on a reasonable capitalization.

"(*b*) Next in importance, no doubt, is the necessity for operating No. 2 by power from the Wilson Dam.

"(*c*) Provision should be made for installing, at least the major part, of the power units so that excess power would be available.

"(*d*) If the complete installation of power units is placed then it might be well to suggest that the excess power be disposed of commercially but that in any event the necessities of the nitrate plants for power be met fully before such excess power is sold.

"(*e*) There will be enough excess power, however, to return a handsome revenue to the Government.

"(*f*) It must not be forgotten that the combined expenditures at Muscle Shoals in the Wilson Dam and nitrate plant No. 2 represent a citizens' investment made for us by our Government. This investment will be of value to all citizens, and consequently, all citizens should desire that the entire project be put on a business basis. The effort should be to make this gigantic undertaking of our Government 'pay out.' It can only be done by a business-like administration of its affairs as will be explained in a later division of this report."

VIII. Possibilities.

In our consideration of nitrate plant No. 2 thus far in this report attention has been focused almost exclusively upon its capacity to produce nitrogenous fertilizers, as lime-nitrogen, ammonium nitrate, and ammonium sulphate. In fact the plant was built as a nitrogen-fixation establishment so that nitric acid and nitrates could be available for the manufacture of military explosives and for use in fertilizers. That in the erection of this great plant Congress had in mind its dual purpose—military and agricultural—is shown by the following quotation from section 124 of H. R. 12766 of the Sixty-fourth Congress:

"The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products by water power or any other power as is in his judgment the best and cheapest to use; and is also hereby authorized and empowered to designate for the exclusive use of the United States, if in his judgment such means is best and cheapest, such site or sites, upon any navigable or nonnavigable river or rivers or upon the public lands, as in his opinion will be necessary for carrying out the purposes of this act; and is further authorized to construct, maintain, and operate, at or on any site or sites so designated, dams, locks, improvements to navigation, power houses, and other plants and equipment or other means than water power as in his judgment is the best and cheapest, necessary or convenient for the generation of electrical or other power and for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizers and other useful products."

(A) AMMONIUM PHOSPHATE.

A great development that can be hoped for at nitrate plant No. 2, is the obtaining of available phosphoric compounds from phosphate rock by treating it in the electrical furnace. It will be remembered that limestone and coke are fused into carbide by means of intense heat in the electric furnaces, and this fusion constitutes the first step in the fixation of atmospheric nitrogen. Later steps produce lime-nitrogen, and from it is produced ammonia gas. A gas is of no value as a fertilizer as it can not be placed in the soil; it must be absorbed in some liquid to make it available, and later reduced to a solid form of a crystalline nature. In No. 2 this ammonia gas is absorbed either in nitric acid to produce ammonium nitrate, or in sulphuric acid to produce ammonium sulphate. In fact there are several acids that will absorb this ammonia gas. To cite only one more, it may be stated that hydroelectric acid can be used to form ammonium chloride, which is good for fertilizer use. In nitrate plant No. 2, if we desire to go beyond the lime-nitrogen or cyanamid product—which is of itself a good fertilizer but with limitations—and produce the usual fertilizer commodites which are generally used, we have to reduce our lime nitrogen to a gas, ammonia, and use that as ths base of our further developments. This ammonia gas contains practically all the nitrogen that the lime nitrogen carried, but it, in its turn, has to have its nitrogen fixed or caught as above stated, in liquid form first, through the use of an acid, and then solidified by boiling.

It is, as above set forth, largely immaterial to this ammonia gas which acid is used to absorb or catch it. Heretofore in this report slight consideration has ben given any fertilizer question except the purely nitrogenous one. If, however, other acids can be produced in No. 2 which will absorb this ammonia gas, and if these other acids of themselves have fertilizing values, then it will be well to make such slight changes and additions in the equipment as will enable us to produce more than one fertilizer constituent.

By using the same electric furnaces that have been previously described, and by filling them with phosphate rock, coke, and sand, instead of lime rock and coke, it is possible to produce a very pure form of phosphoric acid which carries 45 per cent of available phosphates. Here again we see the desirability of the location of No. 2 as some of our largest phosphate beds lie in Tennessee not far from Muscle Shoals. This plan has never been tried out in No. 2, and in fact some alterations would need to be made in the equipment; but there has been a six months' test made of this process by the United States Department of Agriculture on a commercial scale. The result of this test, financially, was that on account of high-priced electric power the product of the test cost more than producing acid phosphate by the old and wasteful method of treating the raw phosphate rock to a bath of sulphuric acid. The conclusion, however, seems to be that with hydroelectric power as cheaply as it can be had at Muscle Shoals the process of making phosphoric acid is entirely feasible and practicable.

In the usual way which is now followed in the production of acid phosphate great use is made of sulphuric acid which has no fertilizing value whatever but really has an acidulous effect of the soil. This is also true of the use of sulphuric acid in No. 2 as an absorbent for the ammonia gas to make ammonium sulphate. In both instances we are carrying something along, sulphuric acid, which has no fertilizing value.

A substitution of phosphoric acid, which carries a very necessary fertilizer ingredient, for the other acids above mentioned, as the absorbent for the ammonia gas, would result in giving us ammonium phosphate, a fertilizer carrying two very valuable soil foods—nitrogen and phosphate. This ammonium phosphate differs from the ammonium nitrate and ammonium sulphate previously described as products of No. 2, in that it carries two fertilizers in one compound instead of one fertilizer in two compounds.

(B) POTASSIUM PHOSPHATE.

It will be seen from the foregoing paragraphs that at Muscle Shoals we have assuredly a plant to produce nitrogen, and also we have the same plant available as a possible producer of phosphate. This gives us two of the three ingredients that usually go to make up the mixed fertilizers which are sold to-day.

In close proximity to the plant at Muscle Shoals there lie great beds of potash shales, many of which contain 4 per cent of potash. It has been experimentally ascertained that the substitution of these potash shales for the sand which is used in the production of phosphoric acid in the electric furnaces does not materially interfere with the chemical reaction that produces phosphoric acid, but does produce at the same time a fusion or union of the potash in the shale with the phosphoric acid. This gives us potassium phosphate with phosphoric acid carrying the potash.

The production of phosphoric acid in making potassium phosphate is in excess of the amount needed to absorb the potash and can be united with ammonia, giving ammonium phosphate.

It will be seen, therefore, that in the one plant there is a great possibility for the development of a complete fertilizer output by absorbing the ammonia gas of the lime-nitrogen process and the potash from the shales in phosphoric acid which is of itself a carrier of fertilizer values and then crystallizing the compounds by the application of heat, much like sugar is secured from the juice of the beet.

(C) OXYGEN.

In one of the buildings at nitrate plant No. 2 the air is separated into two component gases, nitrogen and oxygen. The nitrogen is used in making lime-nitrogen, but the oxygen is released and returns to the atmosphere. Inasmuch as this gas is used extensively in factories and shops for welding and similar uses, eventually we may expect that it will be retained and disposed of commercially.

COMMENT BY THE COMMITTEE.

Although the making of phosphate and potash fertilizers at nitrate plant No. 2 are herein classified as possibilities, it must be conceded by all that not much remains to be done in an experimental way as most, if not all, the chemical problems have been solved. Their classification as possibilities rather than actualities is accounted for by the fact that No. 2 was built to make lime-nitrogen and other forms of nitrogenous products, and certain additions to the equipment and perhaps some new construction would be necessary if other fertilizers were made. Whether or not such expenditures will be approved remains in doubt.

Farmers should realize, though, that the plant is abundantly justified if it produces nothing more than nitrogenous products.

That there may be a clearer understanding of the importance of the entire Muscle Shoals project, and especially that the significance of its phosphate development may be fully realized, your committee submits herewith some quotations from an article written in July, 1919, by Dr. Caro, who is recognized in Germany as the leading authority on nitrogen fixation. Dr. Caro was minister of war munitions for Germany at one time.

"Far more dangerous (to the German nitrogen industry) than the competition of Chilean nitrate appears to be the possibility of competition with artificially fixed nitrogenous fertilizers produced in foreign countries.

"The largest of these foreign lime-nitrogen plants is located in the United States in Alabama. Its situation is most excellent. It is connected with the ocean by means of the Tennessee River, which has been made navigable. It is situated at a source of almost constant water power amounting to 400,000 horsepower, and is right in the midst of a locality where all the raw materials of the lime-nitrogen (cyanamid) industry are present in the highest purity and at the very lowest prices.

"Nearby are the inexhaustible deposits of high per cent phosphate rock. The possibility, therefore, exists of producing cheaply ammonium phosphate containing roughly 45 per cent of water soluble phosphoric acid and 20 per cent nitrogen.

"To be sure the United States is in a position to use right there the nitrogen thus produced, amounting to about 130,000 tons per year—nevertheless it will be possible to ship it long distances to places where its phosphoric acid content will be of importance, and hence it will be sure to offer very strong competition to the German fixed nitrogen industry."

IX. Conservation.

Nitrate plant No. 1, nitrate plant No. 2, and the Wilson Dam together constitute what is probably the greatest single conservation activity of our Government. This entire project should be viewed in the same light as is an irrigation project, a forest reclamation activity, or a levee and drainage problem. Its great purpose, in peace times, is to assist in maintaining our soil fertility, and, consequently, in the adequate production of food for our increasing millions.

As all other conservation projects are of general interest to all the citizens, so is this undertaking at Muscle Shoals. Farmers and military men need not assume to themselves all the benefits accruing from an operation of this project. In times of war it will be predominately military in type; in times of peace it will be almost wholly agricultural in character; but at all times it will be of service to all our people, to protect and to feed.

When the rapid depletion of our soil resources, especially the nitrogen content, is considered we can not view with complacency the ultimate condition toward which we are advancing agriculturally. An average crop of corn takes from the soil about 3,000,000,000 pounds of nitrogen. A cotton crop of 15,000,000 bales depletes the soil to the extent of one-half billion pounds of nitrogen. Other crops take lesser amounts but the grand total will not fall below 6,000,000,000 pounds. Of course, the alchemy of nature is working all the time in slowly replacing this lost nitrogen but the process is wholly inadequate to keep pace with the requirements of our growing crops.

Man is doing a great deal to replace what his crops take from the soil in the form of nitrogen by growing legumes, by spreading manures, and by using fertilizers. But his efforts do not more than half restore the nitrogen that the soil loses yearly. More nitrogenous fertilizers at a cheaper price would assist wonderfully in checking this soil depletion.

COMMENT BY THE COMMITTEE.

In 1920 the average yield of red clover hay was, for the whole nation, 1.46 tons per acre. This hay carried enough nitrogen to yield 0.029 tons per acre or 58 pounds. If enough of this clover had been turned under by the plow so that all the nitrogen would have been given to the soil, it would have taken approximately 4,000,000 acres to equal the annual output of nitrate plant No. 2. Since, however, the sacrifice of all this clover hay, at the price secured on an average for such a product, would represent a soil fertility investment of approximately $60,000,000, it can be seen how significant our soil conservation problems are becoming.

X. Recommendations.

In consideration of all the foregoing information; after personally inspecting nitrate plant No. 1, nitrate plant No. 2, the Wilson Dam, the flood area above the dam, and the construction equipment; after advising with engineers and chemists on the sites of the project; and after submitting the items of cost and estimates herein contained to other engineers and chemists of national reputation; your committee unanimously makes two specific recommendations, as follows:

(*a*) That the Wilson Dam be completed by the Government without undue delay.

(*b*) That since the Government now has the rights, under contract, to produce nitrates by air-fixation processes, the nitrate plants, No. 1 and No. 2, shall be placed under the direction of a governmentally owned corporation, which may, at its discretion, operate the plants or maintain them ready for operation, but with strict regulations relative to prices to be secured for commodities in which products of these plants are used.

COMMENT BY THE COMMITTEE.

In connection with the recommendations above set out your committee offer this additional information:

Relative to recommendation (*a*):

(*a*) That the work on the Wilson Dam is now only sufficient for maintenance.

(*b*) That such maintenance, or stand-by expense, is too great to be long continued.

(*c*) That work can not be resumed on the Wilson Dam until Congress makes the necessary appropriation, which will be approximately $10,000,000.

(*d*) That the completion of the Wilson Dam is indispensable to a successful and economical operation of the nitrate plants.

(*e*) That since the Federal Government has invested millions of dollars at Muscle Shoals, it is nothing but good business to complete the investment by finishing the Wilson Dam so that the entire undertaking may begin to return service to the people and interest to the Treasury.

(*f*) That if work is too long suspended on the Wilson Dam, much of the temporary preparations for construction will not then be available but will have to be again performed.

Relative to recommendation (*b*):

(*a*) That nitrate plants No. 1 and No. 2 can be operated by the Federal Government as the lessee of patent rights covering the processes used. There is herewith submitted a quotation from the contract which has been signed by the firm owning the patents and the Federal Government:

"The licensor (the firm owning the patent rights) hereby gives and grants to the licensee (the Federal Government) in addition for use and application exclusively by the licensee in the operation of the aforesaid plants, the rights, license, and privilege to use any and all of the patents, processes, methods,

and designs embraced in the license hereinbefore granted to the licensee by article 1 hereof, from and after the 1st day of June, 1921, or the date upon which the United States shall cease to be in the present war (whichever date shall last occur) and until the expiration of the United States patents covering the same, upon the following terms, to-wit."

(*b*) That the Federal Government must pay a royalty to the firms owning the patent rights on the processes for every pound of nitrogen content that is manufactured in the plants until the patents expire, which will be in most instances in 1931. Continuing the above quotation:

"The licensee shall pay monthly to the licensor for such additional license under this article a royalty, unless and until changed by the arbitratino hereinafter provided, of 1½ cents per pound of nitrogen content in any and all products manufactured by the licensee at each and every of said plants under and by the use of any of the patents, processes, methods, or designs embraced in the said additional license."

(Then follows provision for arbitration of royalty fees if either party to the contract is dissatisfied.)

(*c*) That the nitrate plants can not be leased by the Federal Government to any private firm, unless indeed it be the ones that own the patents on the processes used.

"The licensor, for use and application exclusively by the United States Government or the aforesaid agent (the representative of the Ordnance Department who signed the contract for the Government) at such plants, has given, granted, assigned, and does hereby give, grant, and assign to the licensee the right, license, and privilege to use any and all the processes, methods and designs covered by letters patent of the United States and involved in the manufacture of lime nitrogen (calcium cyanamid), its conversion to ammonia gas and the oxidation of the ammonia to weak nitric acid, etc."

(*d*) That, therefore, your committee could see only three alternatives relative to the disposition of the plants, as follows:

(1) To lease them for operation; which leasing, under the contract, would necessarily be to the firms owning the patent rights, and would give us, as a primary conclusion, that no appreciable lowering of fertilizer prices would ensue.

(2) To keep the plants intact on a yearly stand-by or maintenance expense, which would be great, ready to produce nitrogen in the event of another war, but suffering all the time an unavoidable deterioration of the present equipment and of its adaptability to the development of new processes, which might reasonably be expected to render us helpless, so far as nitrogen fixation is concerned, in comparatively a few years.

(3) To operate the plants under some sort of governmental machinery with would guarantee a business-like administration of their affairs.

(*e*) That your committee chose the third method outlined above and wishes at this point to outline briefly its ideas as to the administration of the plants.

Your committee thinks it is a universal conclusion that such establishments should not be dependent upon annual appropriations from Congress but that they should be thoroughly equipped, supplied with the necessary operating capital in the shape of a loan or otherwise, and then directed by a board which should be left free to operate the plants on a business basis.

This board should be the legal head of a corporation, the stock of which is all held by the Treasury of the United States. The members of the board should represent various occupations of our people, but each member should be a person of proven business ability. It is preferred by your committee that the members of the board be appointed by the President of the United States similar to the appointment of other Federal boards and commissions. After their appointment the members of this board should be left free, except with such limitations as are legally necessary, to direct the affairs of the entire Muscle Shoals project as a corporate entity.

The powers of this corporation for which this board acts should be, in the opinion of your committee, generally as follows:

(1) To own and operate the entire Muscle Shoals project;

(2) To sell to the United States, to producers, and to others the products manufactured;

(3) To regulate the prices obtained for any mixtures in which products of these plants are used;

(4) To purchase, lease, or acquire patents, both domestic and foreign, of improved processes;

(5) To operate the entire proposition as a business corporation charging prices sufficient to pay a reasonable dividend on a reasonably estimated capital cost.

(*f*) That your committee does not consider the Muscle Shoals undertaking as it now stands as predominately either an engineering or a chemical problem, as those tasks have largely been performed. It is now, rather, a business problem which is of concern to the people in all parts of the Nation.

(*g*) That your committee does not at all favor selling the entire Muscle Shoals project, as has been done with other great war-munition plants, some of which cost approximately as much as Muscle Shoals and were sacrificed, on time sales, at prices representing about 5 per cent of their construction costs.

(*h*) That after the Government has operated these plants for some time and has acquired, by purchase or otherwise, patent rights on the processes used therein, and has demonstrated fully that the research and practical features justify a continuance of their operation, the matter of leasing or selling them to farmers or others for continued operation would then be of pressing importance, as such leasing or selling could be conducted on a competitive basis which is now impossible since the Government is only the licensee of patent rights that are owned by others.

XI. Conclusion.

It is hoped that the presentation of the information herein contained will serve to confirm you in the thought that the action of the American Farm Bureau Federation in months past relative to the Muscle Shoals project has been a correct action, and should be continued with the guidance of the two recommendations above made.

There is an imperative demand at this time for the initiation of legislation in Congress which will make it possible to complete the Wilson Dam and to operate the nitrate plants. It is urgently requested that you signify your approval of the recommendations of the committee in order that the president of the American Farm Bureau Federation, the legislative director, and the legislative committee may feel authorized to proceed.

Respectfully submitted.

W. G. Jamison,
President Colorado Farm Bureau Federation.
John G. Brown,
President Indiana Federation of Farmers' Associations.
Chester H. Gray,
President Missouri Farm Bureau Federation.

Washington, D. C., *May 31, 1921.*

Mr. Silver. The farmer finds himself at this time in a most unhappy situation from being compelled to buy in markets that have been boosted in one way or another, with one trade practice or another. It may be by an excessive protective tariff, it may be by an unfair freight rate, or it may be by private selling agreements, secret processes, formulas, or otherwise, but these different practices have been built up and enter into what we call in our production high cost factors.

I can illustrate one of those factors with the Pittsburgh plus case. Pittsburgh plus provides—it is purely an agreement with no law for it, but an agreement among interested parties—that they sell all steel on the Pittsburgh base price plus freight. If steel is produced at Muscle Shoals, and all the materials are there to-day, just as they are at Birmingham, a little further down the river it would vacate this Pittsburgh plus case. This Pittsburgh plus case is being contested before the Federal Trade Commission as well as before the Interstate Commerce Commission, and $7.60 is paid in phantom freights on every ton of steel that is resold on the Pittsburgh base used at Chicago, there being that much of a handicap between Pittsburgh and Chicago.

The Chairman. What do you mean by "phantom freights"?

Mr. Silver. I mean that is freights that are paid under this Pittsburgh plus agreement on goods never shipped.

The Chairman. To whom is that paid?

Mr. Silver. That is paid to the manufacturers, either the producer or the manufacturer of steel. Steel is sold through a trade agreement on what is known as the Pittsburgh plus base. That means that if I buy steel at Gary, Ind., and I use this figuratively, because any other place would apply as well,

although I have paid no freight except from Gary, which is just a suburb of Chicago, into Chicago, if I buy that steel, I pay the Pittsburgh price plus the freight from Pittsburgh to Chicago. That is a phantom freight added to the cost of the steel when produced, and after it has been produced and sold to a manufacturer he adds on his 20 per cent to this phantom freight as a manufacturing cost which makes it $8.40, and that is all phantom but is very real to the person who pays it.

The CHAIRMAN. In other words, he makes a profit of 20 per cent on the freight that he is compelled to pay?

Mr. SILVER. That he does not pay but is included in the agreement.

The CHAIRMAN. Do they not charge the commodity with that freight at all?

Mr. SILVER. If the steel were produced in Pittsburgh and shipped to Chicago, it is a legitimate charge, because they pay the freight. If it is produced in Chicago, I might say, because Gary is a suburb of Chicago, if it is produced in Chicago they pay that freight under this selling game just the same. It is added to the cost. So that $7.60 a ton is added to the selling price of the steel and then 20 per cent is added on that by the manufacturers when we go to buy a binder or any other part of our equipment made from steel. That is one of the ways of building what we call high cost factors.

If steel is produced at Muscle Shoals it vacates that as one of the high-cost factors and is one of the things that makes a strong appeal in the development of a natural resource that Henry Ford be given the opportunity to develop that plant, because we believe he would not enter into any such trade agreements. We feel we would have another base, and that would vacate the Pittsburgh plus base generally.

The CHAIRMAN. On this phantom freight proposition, the consumer or the buyer of the steel is compelled to pay for something that nobody has got.

Mr. SILVER. That nobody has rendered any service for.

The CHAIRMAN. And ultimately——

Mr. SILVER (interposing). And it is a great sum, approximating some $70,000,000 a year. Why, in the Federal Reserve Bank building in Chicago alone there was $60,000 of phantom freight and plus costs.

Mr. CRAGO. It is an attempt to make up to the manufacturer who is not advantageously located like the man in the Pittsburgh district the difference in cost. That is what it is done for, is it not?

Mr. SILVER. It started out in that way, but it has got to be just one system of building up what we call high-cost factors.

Mr. PARKER. I have not seen that agreement. Have you got it here?

Mr. SILVER. I beg your pardon.

Mr. PARKER. Have you got that Pittsburg base agreement here? The point of it, as I understand it, is all steel is paid for as if it were produced in Chicago?

Mr. SILVER. No; in Pittsburgh.

Mr. PARKER. I mean in Pittsburgh.

Mr. SILVER. That is right.

Mr. CRAGO. And, of course, the great quantity is produced at Pittsburgh and pays this legitimate freight, and this just helps the others to get the same advantages, does it not?

Mr. SILVER. If the cost prices were the same at all the places and it was sold where it was produced, but Gary enjoys the advantage of making cheaper steel than Pittsburgh does and so does Birmingham, and therefore in addition to the fact they produce cheaper steel they not only sell on Pittsburgh base but sell plus the freight.

Mr. KEARNS. What makes you think that Mr. Ford would not adopt the same tactics that other manufacturers do? What is in his record to make you think that?

Mr. SILVER. His life business; I am thinking now of the automobile business.

Mr. KEARNS. Does he not sell the most expensive machine to operate that was ever made?

Mr. SILVER. I shall not discuss with you that point, but with his viewpoint in industry he has produced a car that has enabled the average farmer to own a car when but for Mr. Ford's viewpoint in industry many farmers would never have been able to have ridden in an automobile, and they would still be using the horse and wagon.

Mr. KEARNS. Yes; he produces a cheap car, but what makes you believe that if he should get this contract or this lease at Muscle Shoals he would produce steel or any other manufactured commodity and would not take advantage of prices the same as any other business man?

Mr. SILVER. His viewpoint in producing at a low cost and selling in volume. He would fight just as he fought in the Selden patent case. The Selden patent was a method of building high-cost factors. He contested it successfully and sold his cars cheaper.

The CHAIRMAN. The chairman will not ask any more questions, and we will all pass around the table as usual. I wanted to get a little enlightenment about this matter when you spoke of it, because I knew nothing of the situation, but I will not interrupt further. Just make your own statement in your own way.

Mr. MCKENZIE. Mr. Chairman, as one member of the committee, I think it is entirely within the province of the chairman of the committee as the witness goes along to interject such questions as he sees fit and proper, and I think all of the members of the committee will join me in extending to our chairman that courtesy.

Mr. QUIN. I think that myself. The chairman can frequently help the witness to develop the case.

Mr. FIELDS. I have never understood the rule that was adopted for the guidance of the committee in conducting these hearings to apply to the chairman in straightening out some statement that is made, and I think that the chairman can be of a great deal of assistance to the committee in that way.

The CHAIRMAN. That is what I thought, too.

Mr. FIELDS. I am perfectly willing as a member of the committee to observe the rule as long as it is observed by other members, and I think the rule should not apply to the chairman.

The CHAIRMAN. Of course, what I was trying to get from the witness was an explanation of this term, which was new to us and which we have not heard of before to-day.

Mr. FIELDS. It was very proper, and the chairman rendered a service to the committee, as he has upon a number of other occasions; and I will add, in this connection, Mr. Chairman, that my complaint the other morning, when I stated I had not been the first to violate the rule, was not directed at the chairman but at other members of the committee.

The CHAIRMAN. As long as we have agreed among ourselves to ask questions in rotation, we had better observe the rule and we will get along all right.

Mr. SILVER. However, I would consider it a favor, Mr. Chairman, if at any time I am not making myself understood that the chairman would interrogate me so that I may be clearly understood.

Mr. WRIGHT. I think, Mr. Chairman, it is the unanimous desire of the committee that the chairman ask questions as he chooses; and, to set that matter at rest, I make a motion to that effect.

(The motion, being duly seconded, prevailed unanimously.)

Mr. KEARNS. I am in hearty sympathy with that motion, and I hope my questions have not provoked all this discussion.

The CHAIRMAN. Oh, no. Will you kindly proceed, Mr. Silver?

Mr. SILVER. Along with that illustration I could give others; but I shall not do so, because I think you understand my thought.

The development of water power, to the farmer mind, is one of the ways—and a very material way—of lessening these cost factors if it is developed on the right and proper plan. Our belief in that is evidenced by one of the resolutions I read to you, and also by a letter which I wrote to Secretary Weeks some weeks since, which reads as follows:

JANUARY 9, 1922.

Hon. JOHN W. WEEKS,
Secretary of War, Washington, D. C.

MY DEAR MR. SECRETARY: In turning over in my mind our conference on Mr. Ford's proposal to take over the Muscle Shoals development, and considering the various phases of the situation, I realize that the most serious difficulty appears to be the question of securing an appropriation at this time of heavy expenditure.

In searching for a solution it has occurred to me that an authorization for a Muscle Shoals bond issue of $40,000,000 would remove the necessity for an appropriation. I am confident that under present conditions such a bond issue could be floated at 4 per cent. The interest payments of Mr. Ford amounting to $1,680,000 annually, would pay 4 per cent interest on $42,000,000 of bonds. He provides an amortization fund through which the bonds would be retired at the end of the 100-year period. It would be my thought to issue the bonds for 50 years, at which time the sinking fund would have accumulated to the point where a reissue might be floated at a lower rate of interest. By this means the Government would secure the development of this power with no

additional appropriation and have amortized nearly one-half of the present war-time expenditure of $17,000,000 on the dam, since the amortization fund will, in addition to retiring the bond issue of $40,000,000, retire $8,000,000 additional.

Should this suggestion meet with your approval we shall be glad to cooperate with you in securing the adoption of this plan of financing the development.

Very truly, yours,

AMERICAN FARM BUREAU FEDERATION,
GRAY SILVER, *Washington Representative.*

If the waterways of this country are developed on a basis that permits you to amortize out the cost of the investment, you have electric current on a very much less base than any now produced. In other words, if you, and I am thinking of your committee and Congress, authorize, in accepting Mr. Ford's tender, a bond issue for the needed amount, as much as $40,000,000, and these payments of Mr. Ford are allowed to go as proposed to amortize out the cost of the dam, that current would, on one of these days, be on a basis of maintenance and depreciation, and in that way you would have less manufacturing cost.

I gave you an illustration of steel, and the same principle will apply to manufacturing cotton, to manufacturing farm equipment and machinery, and in all the economic phases of our life. I am thinking of our farm life, but it applies just the same to other phases of our national life; and in addition to that, it would make a cheap current that could be used on the farm. The farmers of this country, where they carry their water from the foot of the hill, as I have done so many times, where they have to bend over the washtub and wash their clothing, where they have to drive their cattle down the lane to water, opening gates, etc., can all be done by electric power, and many more things other than I have enumerated, when it is produced on a basis that is cheap enough so that the production of foodstuffs and raw materials for clothing will pay the bill.

Any time that the economics of the situation are right, the farm homes will be much more comfortable homes. In addition to the things I have mentioned, they will have labor-saving devices and comfort-making equipment, and that will stop, in a measure, this movement from the farm to the town, for the country people will have the opportunity to have in their homes the same kind of labor-saving devices and comfort-making equipment that are found in the city homes, and they should be allowed to have them.

Here is a natural resource, and here is a method of developing it that will give it on a basis they can use it, and we most earnestly appeal to Congress that they do the thing that will enable us to avail ourselves of the results of this natural resource with a proper method of development.

I am now speaking particularly of Muscle Shoals, and my mind drifts to people who may make other tenders or who are objecting to it. Why pick on Mr. Ford at Muscle Shoals? There are many, many other water-power sites, and if the Alabama Power Co., or somebody else, wants to develop water power, why not just move over here on some other river, or at some other point in that river, and develop it? Why protest against the development of Muscle Shoals, if you are unwilling to develop water power? It is just arguing against the law of economics, and you are not going to stop water-power development, and if you want to develop water power, why bother with this situation? Here is a man who is willing to develop this water power, and is willing to go on and do the needed thing, so that we insist and urge that you give him the opportunity, and if somebody else wants another opportunity, why, give him that opportunity also.

Now, in reference to the less-cost factors, I will speak on another phase, namely, railroad freight, the thing that has to do very much with the farmer's life. There is enough of undeveloped water power and more to operate the railways of the Nation. We are suffering under a burden of excessively high freights, and if those railways could be electrified, we would have many economies that would make the cheapest freights we have ever had, if the power is developed on the plan I mentioned, amortize out the cost and put the current down on the basic cost of maintenance and depreciation.

This would not change the cars we have to-day. It would necessitate the changing of the steam locomotives for an electric motor and the wiring and machinery, etc., to run it, or a third rail or whatever they saw fit to use, but it is not such a staggering thought from the viewpoint of the investment, for

we would have saved a great amount of money in equipment that would otherwise be necessary to be expended. For instance, the average movement of freight cars is something like 7 miles a day, where they are moved by steam. Where they are moved by electric power, it is something like 14 miles a day. The same equipment speeding up twice as fast, barring the time it stops for loading and unloading, would move twice the freight. This means you do not have to go on building freight cars in the same proportion as you otherwise would, for you get a greater utility out of the cars that are now necessary. The money that would go into new freight equipment would very properly go into the development of water powers.

Then another thought, as illustrated out here in West Virginia, going from Bluefield up to Roanoke, where they have an unusually steep hill to pull, with the steam engines—trains were always broken down on this hill. The cars would pull apart and the engines would puff and blow and would pull the trains apart and the railroad had to lay sidings around this hill so that when these freight trains were broken down the passenger trains could operate. Seven years ago that line was electrified, and in the seven years it is reported that not a single drawbar head has been pulled. In other words, the trains hauled with the new method of power have gone up with a steady pull and have pulled the same equipment exactly that used to break down and have pulled it up over this hill and gone on their way without delay, and that has become so uniform and general that they have taken out these side switches that they formerly had to have to let the passenger trains around when they were pulled by steam engine.

This means also that the equipment wears longer and you do not have the repairs on it. It also, in a great measure, makes a happy situation as to the terminals. You do run with an electric motor down to every station or every division and have a lot of hostlers to take your steam horse out and put him in a stable and blanket him and rub him down. These electric motors run on and stand a more continuous pull and run.

I am reading now from a report on the advantages of this superpower system, and I will read this, as it is just a short clause:

"The reserves of line and machinery required for joint operation will be much less than the aggregate of the separate reserves required for individual operation. The great waste involved in the maintenance of separate reserves of motive power as prepared by the operating statistics of the roads, quoted elsewhere, show that the average freight locomotive in this territory is in productive service only 3,250 hours out of 8,760 hours in a year."

That is a mighty small part of the year.

"And the average passenger locomotive only 2,630. With joint electrical operation and, consequently, unification of type of motive power, there would be a striking improvement. The steam locomotive runs 8 hours a day; the electric locomotive, 20 hours a day."

That illustrates the additional work you would get out of your electric horse to pull your train instead of your steam horse to pull your train. You can use the electric horse when you have abundance of cheap power and get cheap freight rates, and as the farmer pays four-sevenths of the freight rates in this country he is very vitally interested in any development that will help to bring that about.

Now, all of this is illustrative of the fact that agriculture to live and be prosperous must have less cost factors, and these illustrations are all made to show that this is a practical method of securing for agriculture and for the Nation less cost factors for their business, and when it is developed for their business it is not for any class or a special favor, because if we have cheap freights, every other group and class have cheap freights, and if we have cheaper steel, every other class has it, and if we have cheaper fertilizer, it produces corn and wheat and cotton and the things that are essential not only to our welfare but to our very existence, on a basis that we can afford to meet and compete in the world's markets.

As it is to-day, to give another illustration, from Norway and Sweden they are taking nitrates from the air and bringing them around to the coast of California, your home State, Mr. Chairman, and selling that product in competition with the Chilean nitrate, a natural product produced just below there, because they have built up their cost factors on that fertilizer until you can manufacture it from the air and transport it that great distance and sell it for the orchards of your home State at less cost than you can buy it from Chile.

We are urging this nitrate development or this fertilizer development, and as we look at this proposition we usually use the term commercial plant food.

If you stop a minute and think, when I touch that point, of the great quantities of foodstuffs and raw materials for clothing that are taken from our soil each year, our corn, our wheat, and cotton, and all the other things that enter into it—by far the largest part of it goes to the cities for consumption and export, and that is taking just that much of the available plant food from our soil, thereby impoverishing it that much, because when it goes to the city and goes down the sewer it does not come back to the farm any more. The soil is robbed of that much, and we will become a desert in time if we continue taking plant food from the soil and not replenishing it. The great place to get the nitrates is from the air. There are other fertilizer materials available at this particular point, and while this plant is never going to produce all the fertilizer we want it will be a marker in the development of supplies to replace this great amount of plant food taken from the soil in the crops we grow and which must be replaced if we are to have a prosperous nation.

We can not go on checking on the soil any more than you can go on checking on the bank. Your bank account will come to an end if you do not put something in there to keep it in good shape, and if we go on checking on the soil we come to the end just the same.

Now, just as a reminder, I will speak of what was said here the other day, and I am using cost figures from Dr. Whitney, page 89, hearings of the Senate committee on S. 3390:

"The estimate of the cost of producing phosphoric acid in the electric furnace shows a cost of $29.85 per ton. Power is figured at $3 per horsepower and amounts to $5.28 per ton. If you figure the power at $15 per horsepower, it would cost $26.40 per ton for power alone."

I just give that as one of the illustrations of how we must have cheap power to produce cheap commercial plant food if we are to be enabled to buy commercial plant food at the sale price of the product which it produces.

From cost figures, page 95 of the same hearing:

"Using steam power at 4 mills per kilowatt hour, the cost of cyanamid is $31.10. With water-power cost at three-fourths of a mill the cost is $21.97."

That means a saving right there of about 35 per cent with the cheaper power.

As another illustration of the fact that we are not short of water power, it has been estimated that the undeveloped water powers amount to something like 52,589,500 horsepower. If all the existing railways of the country were electrified, they would only consume about 14,000,000 horsepower. So we would not absorb all our undeveloped water power if we electrified all the railroads. Of course I realize that that can not be done immediately, but there must be a starting place, and we think this is a good time to start; not that we are going to run all the railways from Muscle Shoals, but the same kind of development that develops Muscle Shoals economically and on a less-cost factor basis would develop these other water powers.

Now, when a farmer goes out to buy fertilizer, although there are several companies and many agencies, he gets the same price in the same territory no matter what agent or what company he approaches. He may not be able to prove a working agreement and a trust, as we call it, that makes high prices, but if you were a farmer and went from agent to agent and from place to place, you would be thoroughly convinced that there was a working agreement that the farmer can not get through when he buys commercial plant food.

We believe in this case just the same as we believe in the Pittsburgh plus case, that if Mr. Ford were in the fertilizer business under the provisions of this contract the farmers would get much cheaper fertilizer. There would be a less cost in the distribution as proposed by Mr. Ford, after the fertilizer was produced, and different ones have testified here that at Muscle Shoals it can be produced for one-half what it has heretofore been produced for, and by a cooperative method of distribution there would be economies to that end which we do not have the opportunity of getting the benefit of now.

Then, again, there is another thought I would like to bring to your attention. I am told, although I was not present, that on yesterday one of the witnesses, Mr. McDowell, of the National Fertilizer Association, speaking for the members of the organization (names of the members of this organization are given in appendix), testified that by-product of ammonia gas from the coke ovens was produced at about $6 a ton, each ton being equivalent to about 4 tons of sulphate of ammonia, plus the acid that they mixed it with at a cost of some $12 or thereabout per ton; or, in other words, if you add the $12 for the sulphuric acid that you mix it with and add this $1.50 for the ammonia gas and make some allowance for mixing it, which would run into the teens in some places—say $18—when I am this year trying to buy that same product for my orchard I am asked for it from $57 to $60. Now, it seems that there is room for economy, and there is room for getting on a less cost factor basis in that business; and with our experience in trying to buy and finding the same prices anywhere we go in a given territory, then when they come here voluntarily and testify that it does not cost more than that, we are awfully anxious that somebody be allowed to find out what happens in the dark, between the cost of this production and what it costs us.

If the fertilizer folks believe some phases of their own testimony here when they say it can not be done and that neither Mr. Ford nor anyone else can do it, why are they worried about it?

I have no figures, but it just drives through my mind that they would not worry a minute about it and would not be here testifying if they believed their own testimony.

Just along this line, I think I need not call your attention to the fact that in addition to testifying here there is a propaganda going on. I think no doubt the Members of Congress have gotten circulars and all kinds of printed matter to show that it can not be done and that this ought not to be done, etc. Down on my farm in West Virginia I am getting that literature. Of course, I am simply on a list of voters, or something of that sort, and I am getting propaganda to show that it can not be done and to show it ought not to be done, and all sorts of things like that.

There is a well-defined propaganda going on in this country to prevent Mr. Ford from having an opportunity to see what he can do at Muscle Shoals.

The question of power I have already touched on. Power is a great raw material, and every time that you get raw material that is so widely used as power on a less-cost basis, you affect helpfully all the purposes to which that raw material is put.

In the production of electric current about 75 or 80 per cent of the cost is in the interest charged on the investment. It is not the number of people employed at a dam or at a plant or in the electric business that makes the high-priced current. It is the money cost, and if by a proper method of development you can cut the interest rate in half, this amortization method we have spoken of be applied, you can take 80 per cent of that cost out; and if that is true, is it not due the American people that that be done?

If we go on building high cost, as we have, whether it be with a tariff or trade practice or formula or patents, and get so far above the other countries of the world, do we not simply isolate ourselves and bring down trouble on ourselves? A great many nations have air fixation processes; in fact, the United States is the only large Nation that does not have them. Now, while they have air fixation plants in other nations, they are going to produce cheaply. They are going to produce not only cheap fertilizer, but cheap manufactured goods, and if we are going to keep the export trade we have in manufactured goods, as well as in farm products, we must have this cheap raw material, this cheap current, and in that financing is the biggest single item that can make it cost much less money.

As one illustration of the economy effected by the use of electricity, which I did not mention awhile ago, based on the experience of the Chicago, Milwaukee & St. Paul Railroad, if all the railroads were electrified we would save annually 122,500,000 tons of coal, or about one-third of the country's production of bituminous coal, and the coal cars to carry it and the expense of hauling it. Now, that coal if saved will be saved for future uses, but the water is running away. We can not use that water after it has gone over the dam. The streams go on and on forever, but we have lost the economies at this time.

Now, this has been referred to as a subsidy, if Mr. Ford is allowed to have an opportunity to develop these plants at Muscle Shoals. We do not believe that the proposed development is a subsidy. Mr. Ford, if we understand it right, and we believe we do, is not asking for a subsidy and the farmers are not asking for a subsidy. We are asking for a fair opportunity to develop on a proper business basis.

It has been said that 4 per cent bonds will not sell; that you can not finance this enterprise in that way. If you take a 4 per cent Government bond which is nontaxable and add to it the taxes in the local communities, for instance, in New York State where they had 2.7 mills in 1920 or 1.5 in 1921, or the city taxes in the different cities which run from 1 to 3 per cent, that is not such a bad investment; and, in addition, I believe that if it was necessary

the farmers of this country would buy the necessary bonds at 4 per cent to see that this development goes on.

I know that farmers are in distress and I know that lots of them have not any money and can not meet their interest charges and pay their debts; but there are some farmers who still have some money, and I feel I am clearly within the truth when I say that I believe there would be no hesitation on the part of the farmers of the country to subscribing for these bonds.

There has been considerable contention, I do not know whether it has been before the committee, but in public meetings and in the press, about Mr. Ford's guaranty of 8 per cent as a maximum profit that would be allowed. In spite of all the contention and all the statements that he is not going to do it and can not do it, nobody has offered to produce it on a like basis. Not a single soul has said, "I will do it for less or I will do it for that amount."

Several years ago Mr. Ford promised a tractor, a truck, and a touring car all for $1,000. That made a strong appeal to the heart of the farmer, and the farmers did not forget the promise. He has now gotten the prices down so that $1,187 will buy the three, and if he goes to Muscle Shoals we believe he will be clearly within the $1,000.

It was reported several days ago that the Alabama Power Co. would make a tender, which I understand has been submitted to Congress, and I have a copy of the release here with me, but the matter I want to call to your attention is a telegram from Charles W. Rittenour, president of the Alabama Farm Bureau Federation, as follows:

MONTGOMERY, ALA., *February 17, 1922.*

GRAY SILVER,
Munsey Building, Washington, D. C.:

The Alabama Farm Bureau Federation feels that any legislation providing for turning Muscle Shoals project to the Alabama Power Co. as against arrangement with Henry Ford will be passed in opposition to the best interests of the farmer of Alabama, the South, and the Nation, as well as that of business in general, and that the offer of the Alabama Power Co. is the culmination of trick methods which are devoid of business ethics.

CHARLES W. RITTENOUR,
President Alabama Farm Bureau Federation.

Now, personally, I do not know the Alabama Power Co., but here is the Farm Bureau of Alabama, which they list among their 17,000 customers, and they speak in this language.

The CHAIRMAN. I have a great many telegrams that were sent to the chairman of the commitee and we will put them in the record at the proper time.

Mr. SILVER. Thank you.

There have been lots of estimates made by different parties and freely talked about, as well as published, in referenre to the costs. We believe that Mr. Ford should be given the opportunity to demonstrate what he can do in the fertilizer end, as he has so well demonstrated to the world what he can do in the manufacturing business in other lines.

He may not proceed by the turn of mind of some other folks that have other figures. We believe he is a genius and will be helpful in this situation.

Mr. Chairman, my assistant will discuss technically with you the fertilizer end of this proposition. I think I have about completed my statement, and the whole story that I want to get across to you is embraced in just a few words and is this: We must have less cost factors in agriculture, and we believe that Muscle Shoals is a starting place. We want to start right there and carry the principles involved in the development there to all our water powers. I thank you.

The CHAIRMAN. I take it the members of the committee will want to ask you some questions, and I would like to ask you a few questions myself.

Section 15 of Mr. Ford's second proposal refers to your organization and several others in this language:

"In order that the farmers may be supplied with fertilizers at fair prices and without excessive profits, the company agrees that the maximum net profit which it shall make in the manufacture and sale of fertilizer products at nitrate plant No. 2 shall not exceed 8 per cent of the actual annual cost of production thereof. In order that this provision may be carried out the company agrees to the creation of a board of not more than nine voting members, chosen as follows: The three leading representative farm organizations—national, in fact—namely: The American Farm Bureau Federation, the National Grange, the Farmers' Educational and Cooperative Union of America (or their successors) shall each designate not more than seven candidates for said board. The President shall nominate for membership on this board not more than seven of these candidates selected to give representation to each of the above-mentioned organizatons, said nominations to be made subject to confirmation by the Senate, and there shall be two voting members of said board selected by the company. A representative of the Bureau of Markets, Department of Agriculture (or its legal successor), to be appointed by the President, shall also be a member of the board, serving in an advisory capacity, without the right to vote. The said board shall determine what has been the cost of manufacture and sale of fertilizer products and the price which has been charged therefor, and, if necessary for the purpose of limiting the annual profit to 8 per cent as aforesaid, shall regulate the price at which said fertilizer may be sold by the company. For these purposes said board shall have access to the books and records of the company at any reasonable time. The said board shall also determine the equitable territorial distribution of fertilizer products produced at nitrate plant No. 2. If and when said board can not agree upon its findings and determinations then the points of disagreement shall be referred to the Federal Trade Commission (or its legal successor) for arbitration and settlement, and the decision of said commission in such cases shall be final and binding upon the board."

Your organization is one of the three mentioned in this section.

Mr. SILVER. Yes.

The CHAIRMAN. Have you any method by which you can perpetuate yourselves; in other words, I take it, you are organized at the present time for a limited period. You may, through a condition of affairs over which you have no control, go out of existence altogether, and so may the other two organizations. Then, how would you keep alive this organization that Mr. Ford refers to in this section?

Mr. SILVER. You no doubt noticed right after the words "Cooperation Union of America" the words "or their successors."

The CHAIRMAN. Yes; I did.

Mr. SILVER. Now, the Farm Bureau may disappear, the grange may disappear, or the farmers' union. That is all within the possibilities, but when agriculture disappears there will be no need for continuing the contract, and so long as agriculture continues there will no doubt be organizations among the farmers, and the words "or their successors" were put in there for that purpose. Although we have a considerable membership and are a right smart organization at this time, there would be our successors in whatever organizations may spring up.

The CHAIRMAN. But this contract refers particularly to these particular organizations.

Mr. SILVER. Or their successors, and the successors would be the organizations that would come along to take our place.

The CHAIRMAN. Suppose the men in agriculture do not form any organizations to take the place of those mentioned in this proposal, it is very important, I take it, that in a 100-year lease there should be a distinct understanding who the members of the board referred to may be for that whole period of 100 years. Have you given that any thought?

Mr. SILVER. Our thought on that point is that with our whole national life organized and with all other phases of society organized, agriculture can only exist by being properly organized, and if the time should come when there is no organization, and we still had a country, we would have Congress, and we would come back and ask Congress to change to suit the conditions that then existed. We would work out some plan that would be a workable plan at that time.

The CHAIRMAN. If you had to go to Congress, who would make that representation if your organization had gone out of existence?

Mr. SILVER. We would still have agriculture, if we had a country. We would still have the same people referred to as our successors.

The CHAIRMAN. Among the farmers of the country, have you not had fights among yourselves?

Mr. SILVER. Sure.

The CHAIRMAN. I think it is a good thing that you should study these things out. It may not be possible for you to agree, and suppose one faction comes to Congress and says, "We are the successors of such and such an organization," and then another group of farmers comes to Congress and says, "That

is not so; there is not a word of truth in that. We are the successors of this organization," and then both sets of farmers who appear before Congress put up seven men to represent their organizations. How is the President going to know from whom to select or who to nominate as the ones he is to send to Congress for confirmation?

Mr. SILVER. Well, that is one of the things we have wished on the President, whoever he may be at that time. If more than the three mentioned here should recommend their seven, I am entirely willing to leave that to the determination at that time of the President, whoever he may be, in his recommendation.

The CHAIRMAN. You see the peculiar thing involved here, Mr. Silver, is that this is a contract.

Mr. SILVER. Yes; it is.

The CHAIRMAN. You cannot imagine things.

Mr. SILVER. No; but the contract provides——

The CHAIRMAN (interposing). And you have got to go by the terms of the contract.

Mr. SILVER. But the contract provides for their successors. There may be some question as to who they may be, but the contract provides that at the time the matter comes up there shall be some action taken as to who they are.

The CHAIRMAN. The courts and Congress, even, will abide by the language in the contract.

Mr. SILVER. Yes.

The CHAIRMAN. I can see that possibly great differences can grow up, and we can have bitter fights about this end. Now, is it not better to try to reach some agreement which will make it clear and specific as to just who is meant.

Mr. SILVER. What is your thought, Mr. Chairman?

The CHAIRMAN. I have not given it any great amount of thought, because I have been busy with a lot of other things; but I really think it will not take a long time for the men who are in the organizations to think out a procedure whereby it will be absolutely definite as to who the men will be that the President shall name for this board.

Mr. GARRETT. Mr. Chairman, would you mind asking him the question there as to whether it would be objectionable to this organization to provide that in the event of their disappearing from activity, that in that event the Secretary of Agriculture shall make the suggestion to the President referred to in this paragraph.

The CHAIRMAN. You have heard the suggestion of the gentleman from Texas. He suggests that if your organization goes out of business and you have no successor, that the Secretary of Agriculture might be empowered to name seven men from whom the President shall make his selection.

Mr. SILVER. Yes.

The CHAIRMAN. Would that be satisfactory?

Mr. SILVER. I would be very glad to have any suggestions from the committee, but I would not want to acquiesce in any change without submitting it to our executive committee. We have discussed some clarifying expressions with the maker of the tender, and I still have a reservation here as to that matter for future use, and I will be glad to submit that suggestion, among others, to our executive committee, so that we may have a meeting of minds as to the best thing that can be done. We want the best possible thing we can get out of the situation.

The CHAIRMAN. The only thing that has impelled me to mention this matter at this time is that we have had discussions on that very thing with several witnesses, and as you represent a farm organization, I wanted to bring it to your attention and see what recommendations you might make. I think your organization and the other organizations and the members of the committee can finally work out a thing that will be thoroughly satisfactory to everybody concerned.

Mr. SILVER. Yes; I thank you for the suggestion, and feel sure that we all want to cooperate; and that the language which makes it right the committee and the Farm Bureau would want to accept in good faith.

Mr. MCKENZIE. Mr. Silver, you are speaking to our committee as the representative of all the organized farmers of the United States, as I understand you?

Mr. SILVER. I speak as the representative of the American Farm Bureau Federation. The other farm organizations are in accord with the thought, but I am not officially speaking for them. This contract or clause was written after consultation and agreement with the farm organizations, but I am not the official spokesman of the other groups.

Mr. MCKENZIE. I assume, however, that the views expressed by you have the approval of the other farm organizations?

Mr. SILVER. Yes. There is no difference of opinion, so far as I know, between us.

Mr. MCKENZIE. About how many men are included in those organizations, Mr. Silver, just as a rough estimate?

Mr. SILVER. I can speak more definitely for the Farm Bureau Federation. At the last annual meeting, our reports showed around 1,000,000 paid-up members at that time. That is not the full roll that is carried on our books, which will pay in some time later. Owing to financial difficulties among the farmers, some of them are in arrears, but we feel there are around a million and a half perfectly good members in our organization, but the actually paid-up membership in the latter part of November was just about 1,000,000.

Mr. MCKENZIE. That is, in the one organization?

Mr. SILVER. Yes; in the one organization. The grange—and I am going by the testimony given by the Washington representative of the grange before a committee in Congress some time since—showed a membership of about 700,000; and, I am not quite sure, but somewhere between a quarter and a half million members was the testimony of the Farmers' Union.

Mr. MCKENZIE. If I understood you correctly, you have organizations in practically all of the States of the Union except two?

Mr. SILVER. Yes.

Mr. MCKENZIE. In your organization you include in your membership the retired farmers?

Mr. SILVER. Yes.

Mr. MCKENZIE. And anyone who has an interest in agriculture?

Mr. SILVER. Yes; the determination in selecting our officers is that their principal source of income shall be from and their principal activity shall be devoted to agriculture.

Mr. MCKENZIE. If I understand your testimony, and I think I do, the contention of the men whom you represent is that they are compelled to carry on their lifework and to pay a higher rate of cost for the production of their products than they can well do?

Mr. SILVER. Right.

Mr. MCKENZIE. And sell their production at the prices fixed in the markets?

Mr. SILVER. In the markets of the world, which is the market we sell in. That is right, Mr. McKenzie.

Mr. MCKENZIE. And your contention is that one of two things must happen: Either the cost of production must be reduced or the price of the farmers' commodities jacked up or elevated.

Mr. SILVER. Right.

Mr. MCKENZIE. That being true has given rise, I take it, to the agitation now going on among, perhaps, I might correctly say, the more radical element in your organization and other farm organizations for congressional action looking to the fixing and stabilizing of the prices of the farmers' commodities.

Mr. SILVER. That is exactly right.

Mr. MCKENZIE. Now, I want to ask you whether in your testimony before this committee you have had in mind the one great proposition, that in carrying out the proposal of Mr. Ford, or any such proposal, tending to reduce the cost of the farmers' products, that that is in line with the view of the majority of your people, and would be more in keeping with our traditions and more in keeping with the Constitution of our country than taking the other radical view of attempting congressional action to boost the prices of the farmers' products.

Mr. SILVER. You understand it fully and have stated the question, and my answer is just as your question indicates, because that is the endeavor of our organization. We are not believers in arbitrary price fixing of our products, but we must have a living return out of the products; and in order to get that, if the cost factors can be brought within the proper production costs when we sell our crops, we have the margin which the other groups attempt to get by arbitrarily fixing the prices on some level that they believe will return a profit to them.

Mr. MCKENZIE. You contend, as I take it, and rightfully, that the American farmer is entitled to a fair return of profit on his investment.

Mr. SILVER. Yes.

Mr. MCKENZIE. And a fair return for his labor.

Mr. SILVER. He must have it.

Mr. McKENZIE. The same as any other man.

Mr. SILVER. Yes.

Mr. McKENZIE. Now, then, if the cost of production can be reduced, then proportionately the sale or the price of the sale to the consumer can be reduced and the farmer still earn a reasonable profit.

Mr. SILVER. That is true, whenever we are on a cost basis. Of course, a great deal of our stuff at this time has been below the cost of production, but at any time when the economies are sufficient to offset the difference between the actual price and the sale price then we get on the basis you speak of.

Mr. McKENZIE. I understand you are not contending now that the freight rates should be reduced and the cost of fertilizer reduced and the cost of binders and other agricultural implements which you have to use in farming shall be reduced, and that the farmer shall enjoy all of that reduction for his own particular benefit, and that the selling price shall be kept at the maximum.

Mr. SILVER. No.

Mr. McKENZIE. But you are demanding that this action be taken in order to lower the cost to the farmer, in order that he can sell in a market that is fair to the consumer and still have a reasonable profit.

Mr. SILVER. You have stated the question correctly.

Mr. McKENZIE. That is your battle.

Mr. SILVER. Yes, sir.

Mr. McKENZIE. That is the battle you are fighting now.

Mr. SILVER. Yes; that is the fight.

Mr. McKENZIE. Now, this question of Muscle Shoals, it strikes me—and I do not care whether it is Muscle Shoals or Niagara Falls or Keokuk Dam on the Mississippi River——

Mr. SILVER (interposing). No; and we do not, either. It is just the opportunity we are looking at.

Mr. McKENZIE. To my mind it is a more far-reaching economic and, perhaps, political question than we might think at first blush.

Mr. SILVER. I think you are right.

Mr. McKENZIE. In other words, it has within it the germ of bringing about a revolution in this country so far as the cost of agricultural products is concerned.

Mr. SILVER. That is true.

Mr. McKENZIE. And would be reflected in benefit to the consumer as well as benefit to the farmer.

Mr. SILVER. That is true.

Mr. McKENZIE. And I want to ask you another question, and I am asking this simply to get your views on these matters in the record, because I have my own views about it, but that it not material, perhaps.

Mr. SILVER. Yes.

Mr. McKENZIE. There is one of two ways of operating this plant; one is by Government ownership and operation and the other is by private management.

Mr. SILVER. Yes.

Mr. McKENZIE. You have had a good deal of experience and have been somewhat of an observer, and I take it you are a good American citizen.

Mr. SILVER. I trust so.

Mr. McKENZIE. What is your judgment as to the wisdom of governmental operation of any kind of a public utility?

Mr. SILVER. The members of the Farm Bureau, to which I belong, believe—and this is broadly speaking—that the Government should not act where the individual can.

Mr. McKENZIE. Then it is your belief that this particular project can be operated by individuals?

Mr. SILVER. We now have under the Ford tender that opportunity. We did not have that a year or two ago. It is so big that it has been bigger than the individual could handle. It is an enormously big proposition, and nobody was willing to come forward to handle it. I am talking now about individuals. It was at that time a governmental institution. It still requires the procedure of the Government to make it possible for Mr. Ford to work it, although he is a wonderfully rich man and has a big, strong organization, but we want it operated under the Ford offer, if we can have it so, as a private operation. That is our wish.

Mr. McKENZIE. Of course, this committee is not swayed, I take it, notwithstanding the statement of our good colleague, Mr. Quin, toward Mr. Ford.

Mr. SILVER. No.

Mr. McKENZIE. Or the Alabama Power Co., or any other organization. We have been trying to solve this problem in a fair way, but I am very glad, indeed, to hear you say that if it is possible to side-step governmental operation of this plant and have it operated by Mr. Ford or some one else as an individual proposition that you believe it will serve the best interests of our Government.

Mr. SILVER. We sincerely believe that, not only in this case, but in connection with the railroads. In the 1,500 farm bureaus which we had at the time of the question of the Government turning back or not turning back the railroads, after Government operation during the war, not one single farm bureau in the United States voted for Government ownership. Each and every one voted for private operation of the railroads. Now, that is the kind of people whose wishes I am reflecting here in this matter.

Mr. McKENZIE. Of course, if it was operated by Government ownership, the subsidy spoken of by some of the gentlemen who have appeared before us would go on just the same, except the subsidy would be paid to the farmers by the Government instead of being paid to Mr. Ford. Is that your view of it?

Mr. SILVER. If you can interpret it in that way. To my mind it is not a proper interpretation; but if it were true, it would go on just the same.

Mr. McKENZIE. In other words, in order to sell to the farmer at a reasonable price fertilizer produced by governmental operation, would it be your judgment that we would have to have one hand in the Treasury to make up the difference between what it cost the Government to manufacture it and what the individual could manufacture it for under like circumstances?

Mr. SILVER. I do not know whether I quite catch your question, but if I do catch it, I would say no; but I am not quite sure about your question. I do not think for a moment that Mr. Ford or Mr. Anybodyelse operating Muscle Shoals as proposed under this tender has one hand in the Treasury.

Mr. McKENZIE. No; I do not mean that; but I mean that if the Government was operating it as a governmental proposition, in order for the Government to be able to sell to the farmer fertilizer at a price lower than that at which it is now produced by individuals in this country, the Government would have to make up the losses by taking money out of the Treasury. In other words, the men appointed by the Secretary of War or by some other governmental administrative head here in Washington, perhaps, bank clerks and druggists and pharmacists, and so on, to go down to Muscle Shoals to manufacture fertilizer for the farmer, probably would not be able to work on as economical a basis as the man employed by individuals, who would only employ such men as would be competent to do the work which they were expected to do.

Mr. SILVER. We believe you would get more economical operation in private industry than you would in a Government-operated industry; but at Muscle Shoals, in this particular case, we believe that the economies in the operation that would be available there by the cheap raw material and power would cut costs below the costs that generally prevail now, not only in the cost of production, but in the cost of distribution.

Mr. McKENZIE. That is true, and I am afraid I have not made myself plain. I am trying to bring out the fact that from experience and observation it is apparent, it seems to me, to everyone, that governmental operation of a utility such as this would be, or of a manufacturing enterprise carried on by the Government, could only be carried on at a loss as compared with the operation of the same plant by private ownership.

Mr. SILVER. We think that Government operation would be higher with the same plant and with all the economies balanced.

Mr. McKENZIE. Then by selling this property or entering into a lease with Mr. Ford or some one else who might make a better offer, having in mind the interests of the Government first, we would be infinitely better off, and the people of the country would be better off, than for the Government to undertake the operation of it as a governmental activity. Is not that true?

Mr. SILVER. Yes.

Mr. McKENZIE. I am glad to have you say that, and I think that is all I want to ask you.

Mr. GREENE. Mr. Silver, you said you did not think this proposition of Mr. Ford involved a subsidy from the Government.

Mr. SILVER. Yes.

Mr. GREENE. Of course, the word "subsidy" is a sort of portmanteau word. You can put almost anything into it and call it by that name.

Mr. SILVER. Yes.

Mr. GREENE. Subsidies take various forms. Suppose the Government had an immense property such as the one at Muscle Shoals and sold it to a private

enterprise at a price not only way below what it had already invested in it itself but at a price far below its commercial valuation, so that the private enterprise, entering upon its use, had only a limited amount of money to charge off to capital stock, and could do business thereafter on a basis entirely different from the basis that private enterprises elsewhere must follow, would not that amount to a subsidy?

Mr. SILVER. There might be such an interpretation in some minds. That is not the generally accepted use of the word "subsidy," however, is it? I do not so understand it. Now, they might have the advantage to be gained by having bought something cheap.

Mr. GREENE. Exactly.

Mr. SILVER. But that is not the usual use of the word "subsidy."

Mr. GREENE. Then, if we do not want to split hairs over the meaning of the word "subsidy" and turn ourselves into a dictionary committee, let us see what a subsidy does. A subsidy gives an advantage in bookkeeping; a subsidy gives an advantage in the economical administration or operation of anything. It helps to pay the expense. That is what it is designed for, is it not?

Mr. SILVER. Yes; that is one way of stating it.

Mr. GREENE. And that is the only purpose of it, so that a man can come out even or better.

Mr. SILVER. It is to be a helpful thing.

Mr. GREENE. And whatever term we call it by and whatever form the proposition takes, it reduces itself to the fact that the man who gets the benefit of it does not have to put so much of his own money into it in order to come out even.

Mr. SILVER. That is one way of stating it.

Mr. GREENE. That is an accurate way, is it not?

Mr. SILVER. I did not question the accuracy of it.

Mr. GREENE. Then, if the Government starts out on a policy by which it takes a very valuable property which has, we will say, loosely, an indefinite commercial value, and nobody knows probably the accurate value or how much you would charge this thing off to be worth, but worth very much more than the $5,000,000 Mr. Ford offers for it——

Mr. SILVER. Yes.

Mr. GREENE (continuing). And also agrees to put its own money into it in order to complete the fixtures before it is turned over to Mr. Ford.

Mr. SILVER. Yes.

Mr. GREENE. A private enterprise starting out with such a plant as that would have a tremendous advantage over any other private enterprise that had to raise its own money and had to get a water power wherever it could and under the best terms it could.

Mr. SILVER. Let us think about that a moment. Mr. Ford agrees to pay, using the illustration you gave, the $5,000,000 for a certain plant. He does not buy that plant as you or I would buy a plant and turn it over to whatever purposes we might see fit, as was done in my own State of West Virginia at Nitro and at some other places, but he buys it and agrees to carry it for a certain specific purpose and to carry it for the Government's use as a going concern, equipped and manned whenever it may be needed, and there is a cost factor there that ought to be thought about.

Mr. GREENE. I am not trying to neglect the terms of the contract. I am trying to get at the policy of it. I am simply asking you these questions in good faith, and not necessarily as an antagonistic proposition, but we want to get at the various angles of the matter. This thing is bigger than fertilizer. It means entering upon a public policy and by the very terms of the contract we bind ourselves and our children and our children's children and generations thereafter following, and the question is whether you believe it is good public policy for the Government itself to contribute property and funds, whatever may be the amount that subsequent bookkeeping may disclose. We are talking about the principle of contributing property and funds to enable one private enterprise to compete against any other and against all the others in the production of any particular material.

Mr. SILVER. Now, we will just turn that into dollars, because property in one sense is dollars, and think about it a little bit in different terms than the specific property involved there. We are doing a great deal of reclamation work. The Government is putting money in dams and in other things necessary to irrigate arid lands and produce more foodstuffs and raw materials for clothing, and in order to do that the soil needs water. Now, in this particular case they take the water and put it over a wheel and catch from the atmosphere a fertilizing element and put it back on the leached soil from which we have been taking foodstuffs and raw materials for clothing, etc., and sending them away. When you go back to the question involved there it is simply a question of this sort: Is it a desirable policy for the Government to encourage agriculture as a basic thing or not?

Mr. GREENE. The instance you cite of irrigation of arid lands arises out of an entirely different set of conditions.

Mr. SILVER. But it is mostly the same kind of production, of foodstuffs and raw materials for clothing.

Mr. GREENE. I am trying to get at your idea of the principle involved. It is naturally the first duty of a Government to see that the people who respond to it and who are obligated to it at least have a spot of ground to live on. That is necessary. That is something upon which there is no possibility of anybody obtaining some soil out of private resources. They must be provided for somewhere, because that is ultimately a physical condition; they have to live.

Mr. SILVER. And they must have foodstuffs and raw material for clothing.

Mr. GREENE. I am getting at the basic, because if you have to consider foodstuffs, then have to follow that line of sequences, you will finally have a principle under the operation of which there would be equal reason for the furnishing of moving pictures and things of that sort.

Mr. SILVER. We do not need a plot of ground in order to produce food and clothing.

Mr. GREENE. Not all plots of ground produce food.

Mr. SILVER. But we have got to have the plots of ground to produce foodstuffs, as well as having other things.

Mr. GREENE. I do not want to carry this discussion to a point where it will weary the committee or take up too much of its time. These lands which are irrigated were once Government land, and the Government by adopting a policy is restoring the arid lands to use. If you start with the theory that you can put anybody up in business to compete against private industry with the aid of Government funds, where are we going to stop?

Mr. SILVER. When you irrigate arid lands you set somebody up in business to compete with the other farmers, and you produce more foodstuffs and raw materials for clothing.

Mr. GREENE. You started out with the idea that you were furnishing homes for people, and you do not contend that the arid lands are a serious competitor with the rich agricultural lands of the country. They are places where people can live.

Mr. SILVER. To my mind, you have to carry along just what I stated a few minutes ago, that where those lands were barren without water, the Government put up the money to put the water on those lands. In this case it is putting up the money to put the product of the water back on the soil. I think that is a complete answer. I may not be answering the question adequately to your mind, but to my mind that is the reaction.

Mr. GREENE. Then, if the Government can subsidize directly or indirectly by any amount of advantage in economics one enterprise that it selects by contract so it may compete against other private industries—in this particular case it is the manufacturer of fertilizer—where are we to draw the line? What other industry that has now the investment of capital in the enterprise furnished by private citizens will be the next one to meet competition by subsidy?

Mr. SILVER. I do not for a moment think of it as a subsidy. On the other hand—and I am not going to enter into a discussion of that—the Government levies a tariff, which is a class privilege, that may or may not be justified, and it takes from one group of people and gives to another by Government authority.

Mr. GREENE. On that theory would you argue that two wrongs made one right?

Mr. SILVER. No, sir; but I do contend that there are sometimes conditions that justify certain things being done, and Congress in its wisdom tries to do that, taking into consideration the fact which they realize that they sometimes tread on people's toes. But they have used their best judgment to do a helpful thing for the people as a whole.

Mr. GREENE. There are other raw materials or essentials to industry in other lines which are quite as essential to the support and maintenance of society as fertilizer. I realize that agriculture is the mother of the arts, but

our presently organized social system depends on other things as much as on fertilizer.

Mr. SILVER. Not until they have gotten something to eat.

Mr. GREENE. But you are balancing it between the present highly organized social system and a return to the primitive way in which everybody would feed himself, as they used to do, and we do not expect to go back to that. We do not want to. But we can not escape from the original conclusion, that we have to eat to live, and having lived there are other things as essential, or else we do not want to eat to live. We do not live to eat. There are other things considered as essential, perhaps clothing, but we do not set up some machinery by which we can assist private enterprise by having favorable terms to compete with its neighbors in the manufacture of clothing.

Mr. SILVER. Just turn your question around—when you say we do not just live to eat. But we do live to eat, if we do not do the things we are discussing in providing the things we are discussing for clothing and foodstuffs, we do not eat to live and do other things.

Mr. GREENE. You would not undertake to convince the committee that you have arrived at that stage where foodstuffs are in a perilous condition.

Mr. SILVER. I am not thinking of to-day; I am thinking of the future.

Mr. GREENE. So am I, and I am wondering what kind of policy we will commit our children to.

Mr. SILVER. Whether we have an abundance of foodstuffs on the most economic basis, or raw materials for clothing on the most economic basis, is the question involved here.

Mr. GREENE. I dare say your mind and mine would not meet on that.

Mr. SILVER. We might not.

Mr. GREENE. You said, concerning the question of financing this proposition, that the farmers would take bonds at 4 per cent.

Mr. SILVER. Yes.

Mr. GREENE. How do you reconcile that with the constant clamor that they can not pay their mortgages on their farms now?

Mr. SILVER. I will qualify that. In the farmer's meetings now the talk is like this: "I have not been able to pay interest on my mortgage; I have not been able to pay; in many instances the girl who was in school has had to get out, because I did not have money to continue her in school; the boy, who was ready to go to school, could not go, because I did not have the funds wherewith to send him, and so on down the line. The house furnishings, which ran down during the war period, are still down, because then it was not thought very patriotic to buy those things, and now I have not the money to buy with." And so on.

But there are still farmers with money, in spite of the fact that farming, as an industry, is in a very unhappy plight; just so unhappy that it can not meet its payments. But, on the other hand, there are some farmers who still have money, and I believe in the 6,500,000 farmers there would be some, who, if necessary, could buy these bonds to see that Muscle Shoals was developed, for they are looking forward to its development that would mean a program along the lines of developing our natural resources that would be a help to our farmers.

Mr. GREENE. You think they would come to the support of bond issues for this purpose much more readily than to the maintenance of bonds issued for Federal farm loans, directly for their purposes?

Mr. SILVER. There have been so few Federal farm-loan bonds issued that that is hardly a question which you can raise. I do not know who bought them; but the other day $75,000,000 of those Federal farm loan-bonds were sold almost in one day.

Mr. GREENE. When the Federal farm-loan proposition was originally presented we were told when the law passed that the farmers would soon take care of themselves.

Mr. SILVER. They did ask for some working capital, and that you give an authorization for a higher interest rate when money was selling higher.

Mr. GREENE. I mean working capital. We were told originally that if we just started them off, that then they would take care of themselves.

Mr. SILVER. But the courts tied them up tight. They were tied up by the court procedure for quite a while, and then we got into a period of high-priced money, so that they had so many handicaps that were not anticipated.

Mr. GREENE. I am not trying to minimize the handicaps that the farmer has been living under, but I am asking whether you have confidence in the

purposes of the farmers as a whole so that you believe that they will finance this proposition any more than any other we have put before them.

Mr. SILVER. I am thinking about the war issues of securities, and that is the only time the farmer had a chance to buy government issues, except the really small amount of farm loans. The farmers did buy war issues to the limit; they were good buyers. I live in an agricultural county, and of the 5,000 men in my home county, over 4,900 invested in Government bonds, or war savings stamps. They were not able to buy in the volume that some other communities were able to buy in.

Mr. GREENE. Of course, that was not a commercial or a business proposition, and you would not make the analogy that people coming to the support of the Government in time of war for patriotic purposes were of the same mind as they would be in the case of a commercial venture.

Mr. SILVER. I grant that, but I do say that in the case of the only chance they ever had to buy they did buy.

Mr. GREENE. They had a chance to put working capital into the Federal farm loans.

Mr. SILVER. The farmer has been asking for months for Federal farm loan bonds. But they have not been supplied, and they have not been in distribution so the farmer could readily get them. Recently they have been selling at a premium. When the time comes that those bonds can reach the farmer readily he will buy if he has the money with which to buy. But whether he has the money depends upon the things we are discussing here.

Mr. GREENE. I come from a farming community that is very thrifty, and I have the utmost respect for my farmer neighbors. I am a descendant of the soil, as all of us in that part of the country are, but I think if I took you from this table to one side and appealed to your business instinct to get your expression as to whether farmers as a rule temperamentally flock to the support of commercial issues supposed to be to their advantage, I think you would want to be sure that the stenographer had a few cautionary limitations in your answer.

Mr. SILVER. In that question I scarcely think you are quoting me, and you are making a suggestion that I do not think I have read into the record.

Mr. GREENE. No, I do not mean that. I am talking about making an investment that the farmer will back up. You and I can not quite get together on the subsidy side of it. There is only one more question I want to ask you.

Of course, the matter of the electrification of railroads by the potential power in the country is naturally one of the great economic problems that confront us, and I do not suppose that you would contend that the mere development of Muscle Shoals would give us much light on that. The water power of the country is not so dispersed geographically that all of the railroads would get power from them even if the power were developed. That is rather a theory than a probability of actual realization, as yet.

Mr. SILVER. I specifically said, on the contrary, that I was not discussing Muscle Shoals from the point of view of operating service, but if developed rightly it will be helpful.

Mr. GREENE. It would be an experiment along that line.

Mr. SILVER. The experimentation is in a very large degree done. Hundreds of miles of railways are now being operated electrically and economically. I am thinking of the national life of our people when I say if we could develop waterways on the plan proposed here, amortizing the cost as we go along, and getting power down on a low basis instead of on a high basis it would be of tremendous advantage. As it is now our waterways and other things are built up by issuing bonds and stock, and more bonds and more stock as the earnings increase, and the cost of material and power is built up to a high level. But if we reverse the proposition as it can be applied to Mr. Ford's tender, and instead of building and financing at a tremendously high rate of interest if we could get it on a low basis we will be helping every kind of activity that can use raw material with the power.

Mr. GREENE. Would you have the Government do that?

Mr. SILVER. I would not hesitate to have the Government authorize a bond issue just for any water-power development that was of sufficient size to enter into our life's activities as this does.

Mr. GREENE. You mean the Government shall stand back of it or stand sponsor for the bonds, or would you authorize their issue by private capital?

Mr. SILVER. Authorizing their issue by private capital means bonds and stocks and more bonds and stocks, building high-cost factors or high-priced raw material and of power all the time. A proposition in this immediate

tender, which I see no reason for not being extended to others, is the amortization of the cost in the way it is provided for here.

Mr. GREENE. But that is not what I was asking you. Would you have the Government authorize the disposal of power by the amortization process and limit such a process by law, or would you have the Government itself own and control the power and itself amortize it on some terms or lease it to private individuals?

Mr. SILVER. Just as I said, I would apply the same principle in the amortization at Muscle Shoals at other places as it is desirable.

Mr. GREENE. That would mean the Government buying property.

Mr. SILVER. The Government starts with the property.

Mr. GREENE. I am not talking about this property.

Mr. SILVER. It has a river to start with. There is no reason why the Government should not amortize the cost of the dam and have the lowest-cost factor in raw material.

Mr. GREENE. I guess we do not get together on that. I am thinking of private water powers now, owned and controlled, because if you start anywhere you would want them all. That is a question of proper national policy, and I think you are getting pretty close to the edge of a dangerous practice. I will just try to make that clear. I am simply trying to draw the line in between the proposition you made to Mr. McKenzie and this proposition. You did not want the Government to own and operate railroads. You thought it could be done better by private enterprise. And yet I wonder if there is very much difference in the Government undertaking to get possession of all these private water powers and then leasing them out on terms to private individuals—I wonder if there is any difference in principle.

Mr. SILVER. The question involved there is not a serious question, nor is it a question of Government operation at all. If the Government does exactly what I suggested and authorizes a bond issue and it is amortized as I have suggested and that policy is carried as far as the judgment of the Government sees fit, but in doing so keeping in mind the public welfare, which applies in the case of railroads and other things which I have mentioned, then I think there will be a solution. The purpose is to get cheap raw material in the way of power needed for the different activities, the essential activities of national life.

Mr. GREENE. You appreciate that once the Government began to direct by that process of limitation the control and administration of all natural resources involved in power it opens a field of going into mines and quarries and other natural resources just the same.

Mr. SILVER. Let me say right there that the group of people I speak for—and I am referring to farmers, largely—are the group of people that, in the main, you have got to rely upon to protect and maintain private ownership. If the farmers of the country had taken a different attitude on the railway question there might have been a different answer to-day. They believe in private ownership, and if at any time big business, as it is sometimes referred to, breaks with the great farming group and their fixed belief in private property, which is more firmly fixed in that group of people than in any other group of our national life, because next to human rights they believe in property rights—if big business does break with that group, although I do not anticipate that they will, because there is no reason for them breaking, organized labor would take the railroads under the Plumb plan or some other plan, from the owners, and organized labor would take the coal mines from the owners, and the very people you refer to are the people you have to rely on to maintain property rights.

Mr. GREENE. You echo my opinion quite convincingly. I believe with you that the substantial element we must depend upon for the old constitutional idea of Government is largely the people of the countryside. I heartily concur in that opinion. That is one of the reasons why I am suggesting to you that in undertaking contracts of this character are we not in danger of beginning to woo them away from their original faith?

At the end of Mr. Ford's offer there is a provision that there shall be a right at the expiration of the hundred-year lease in this company or its successor to the use of the power for all time, under reasonable rates. Do you believe that is healthy public policy?

Mr. SILVER. I read into the record one of the resolutions under which I am acting, which ought to answer that question.

(Thereupon, at 12.30 o'clock p. m., the committee adjourned to meet to-morrow, Thursday, February 23, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Thursday, February 23, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MR. GRAY SILVER—Resumed.

The CHAIRMAN. At noon yesterday we had only completed your examination in part, and this morning we will continue from where we left off. Mr. Hull will begin to ask you some questions.

Mr. SILVER. Mr. Chairman, If I may, I would like to make one statement. Yesterday I read an extract from the report on the superpower system and I did not give it to the reporter. I would like to ask that this entire sheet be included in the record in connection with the part I read on yesterday.

The CHAIRMAN. If there is no objection, that will be done.

(The statement referred to follows:)

"ADVANTAGES OF RAILROAD ELECTRIFICATION.

"Unified operation by electricity, on the other hand, would give much better conditions than any that could possibly be attained under unified operation by steam. There would be a new motive power, in which all units or parts designed for similar service would be identical and interchangeable. There would be pooling of all power, with great reduction of reserves. Repair shops would be consolidated and maintenance would become a standardized manufacturing job. Track capacity would be greatly increased and certain tracks would be allocated to freight or passenger service exclusively. All freight trains would be run on schedule; the average speed would be more nearly the same and would be increased at least to the 12.5 miles an hour needed to avoid the present punitive overtime payments. Engine houses facilities would be much simplified by consolidation.

"The reserves of men and of machinery required for joint operation will be much less than the aggregate of the separate reserves required for individual operation. The great waste involved in the maintenance of separate reserves of motive power is exhibited by the operating statistics of the roads, quoted elsewhere, which show that the average freight locomotive in this territory is in productive service only 3,250 hours out of the 8,760 hours in a year, and the average passenger locomotive only 2,630 hours. With joint electric operation and consequent unification of types of motive power there would be a striking improvement. The steam locomotive runs 8 hours a day; the electric locomotive 20 hours.

"Some of the advantages of electric operation are the conservation of national resources, both of coal and labor; an increase in the capacity of main and yard tracks; an improvement of the physical condition of terminals and an increase in the value of the property, as shown by the New York Central and Pennsylvania terminals in New York City; benefits both to the traveling public and to residents along the route through the elimination of noise and smoke; the possibility of providing multiple-level terminals and freight warehouses; and economy in operation through the use of fuel and machinery for generating energy by a few skillful operators in economical stations as contrasted with a large number of technically ignorant operators with small, uneconomical machines.

"The electric locomotive is equipped with meters that afford complete knowledge and control of operating conditions and that are also a valuable guide in handling the train, particularly in starting a long, heavy train. With electric traction the economy of the entire sequence of operation is not dependent upon one man, as it is with steam. Operation is therefore no longer a matter of individual human judgment, skill, or fidelity. It is this unfortunate human element that nullifies the theoretical advantages of the 'full-jeweled movement' steam locomotive. The effectiveness of the devices for increasing efficiency and capacity, such as brick arches, superheaters, stokers, siphons, automatic fire doors, and power reverses, necessarily depends on the intelligence and faithfulness of the average engineer, and in consequence the average results are low. The inherent wastefulness of the steam locomotive is proved by its own advocates in their claim that '40 per cent of its coal can be saved by the careful use of these auxiliary devices.' Then why be skeptical of a saving of 60 per cent

by a modern power station, which has all these devices in greater completeness and, in addition, has brains to use them?

"The speed of different classes of trains will be more nearly uniform. Much heavier trains can be handled, and at the same time light freight trains can be moved at the speed of local passenger trains. It has been proved that for the heaviest freight service, such as mountain-grade work, the electric locomotive is superior to the steam locomotive, but its superiority in handling light freight at high speed is not so generally understood.

"As the electric locomotive is simple and as all locomotives of a given class are identical and no more skill is required to operate them than is demanded of an ordinary chauffeur, all locomotives will be pooled, so that the total number required will be materially reduced.

"The flexibility of the electric locomotive is much greater than that of the steam locomotive. Its capacity is determined by heating and therefor by the average work it has to do, and not by the maximum grade, which is taken care of by the overload capacity of the engine. With electric traction the maximum grade for the profiles within the superpower zone is practically eliminated as the determining factor in locomotive equipment.

"The availability of the electric locomotive for service is at least twice as great as that of the steam locomotive. After a trip it can be thoroughly inspected in less than an hour, whereas the thorough inspection of a heavy steam locomotive consumes 4 to 10 hours. It requires no water, fuel stations, ashpits, or turntables. The repair shop capacity required is less than a third of that needed for steam locomotives. The expense of track maintenance is reduced and the ballast is cleaner. The engine-house expense is reduced nearly to a negligible amount. In the electric locomotive energy can be regenerated where the profile permits it, thus saving some energy and much wear of brake shoes, bettering the handling of trains, and consequently saving expense in freight-car maintenance.

"As a result of these and other advantages the electric locomotive should, under favorable conditions, handle twice as many ton-miles as the steam locomotive per locomotive-year; on the Norfolk & Western it actually handles three times as many ton-miles. This gain is not possible under all conditions, but it is possible where the traffic is great and the tracks, yards, and terminals are congested, as they are in the superpower zone.

"Electric traction, then, gives increased capacity of main-track yard track, and locomotives with reduced cost of operation and maintenance per ton mile and per passenger-mile." Extract from report of Chief Engineer W. S. Murray on the Superpower Survey.

Mr. HULL. Mr. Silver, I want to clear up one question that you answered that was asked by Mr. McKenzie. I do not suppose that you intended in answering the question the full import that your answer might give. It seems to me very important to know just how the farmers stand in regard to one matter. You said that the farmers of the country were opposed to the Government manufacturing or entering into any business that could be conducted by private parties.

Mr. SILVER. Broadly speaking, I said that. I used the expression in a broad way, and was trying to use a short expression.

Mr. HULL. As I caught it, it might be construed to say that the farmers of this country were in favor of the Government not manufacturing any munitions of war during peace time. Now, that is a very big question, and is one that is pressing hard not only in this country but all over the world, and if the farmers are in favor of private manufacture of war materials in peace time, I am very badly misinformed. As I understand it, they are absolutely opposed to it. I, myself, am very bitterly opposed to it and shall fight this as long as I have breath of life to fight it, and I want to know whether, in your opinion, briefly, the farmers only are in favor of private manufacture of munitions of war during peace time, when we have factories that can manufacture these things which factories the Government owns.

Mr. SILVER. I agree with your thought as expressed in that particular, that it would be a proper Government function for the Government to provide itself with munitions.

Mr. HULL. I simply wanted the record clear; that is all.

Mr. SILVER. Yes.

Mr. HULL. And now I want to get back to the proposition that is before the committee with regard to the Ford proposition at Muscle Shoals. I understand we are to have another proposition put before us submitted by the Alabama Power Co. They make a proposition which is quite radically different from

Mr. Ford's. They propose to turn back to the Government 100,000 secondary horsepower, and they do not take over plant No. 2 for the manufacture of fertilizer.

Mr. SILVER. Yes.

Mr. HULL. That presents a very different problem for us to consider, because under their plan, plant No. 2 would not be operated.

Mr. SILVER. No.

Mr. HULL. And the question comes up, or naturally will come up, if we should happen, in our wisdom, to accept the proposition of the Alabama Power Co. or a proposition of that kind, are the farmers prepared to finance a corporation that would use this secondary horsepower which they turn back to us to develop this plant No. 2 in the manufacture of fertilizer, as is proposed at the present time by Henry Ford? I think you catch the idea I have in mind.

Mr. SILVER. Mr. Congressman, to my mind the plant at Muscle Shoals, to which you refer, is only a part of what is involved. In addition to the plant which we think has value, although different people have testified it has no value except a junk value, and we differ from them on that, but Mr. Ford's genius and Mr. Ford's capital and his disposition to be philanthropic in this matter are all things that we consider in thinking about the Ford tender and Muscle Shoals, and the Alabama Power Co., or any other company. If we can interest Mr. Ford's genius in this matter it is a great asset to agriculture, and Congress can not confer that genius upon some farmer. Congress can do a great many things, and is a very powerful body, but it can not confer the genius of Mr. Ford upon some farmer and turn him loose to run that plant, if the other things were all in working shape. In addition to that, the farmers are not asking that the plant be turned over to them to see if they can or can not make a success in the manufacturing world. They are asking that the tender be accepted, which has been made by a genius in manufacturing lines, and one who has the capital and machinery and the organization to run the business and has run one of the most successful businesses that ever has been run.

Mr. HULL. Naturally, the question that comes up right there is whether in the Ford proposition there is proper protection as to the future development of that property along the lines you suggest and whether the genius of the organization of Henry Ford will be utilized for the farmers and the people of this country. In other words, while we hope it will not happen, yet life is frail and with a man of the age of Mr. Ford we have no assurance that he will live for any definite period of time, and suppose that in five years he should pass away, have we properly protected the future use of this property along the lines you suggest?

Mr. SILVER. That is a very proper question, but if we carry what you indicate is your thought to a proper conclusion, no farmer would plant a crop because he might not live to harvest it. Farmers do not look at things just like some other folks do. They have faith in the law and have faith in their governmental institutions, and have faith in the integrity of a great many people, although not in all the people. We will have to make the best contract we can with one who has the genius and the capital that will operate this plant, and certain things may have to be taken on faith. Not that I think we are taking any chance in this matter, but, looking into the future, we know that Mr. Ford will not live 100 years. That is one of the things he will not do, but his genius in setting up and starting this machinery may give it an impetus that will carry it on for a long, long time, and there is no other genius similar to Mr. Ford's, and this will make for the American people a great development that has not yet been started.

If you think of this thing broadly, there just comes to my mind something which I do not know whether this is the proper place to bring it in or not, but I will bring it in here anyway. There are two ways of developing this great natural resource. There may be others, but there are two ways that occur to my mind now. One is the way I discussed with you yesterday, and that is to develop this particular project in a way that will be a marker for the development of other similar natural resources and at the same time maintain to the people the equity in the property after the amortization has been completed; and after it is amortized out the public are entitled to the equity. Or we could do the other thing, and there just drifts through my mind the development of our oil and gas business in this country. That was developed under the old thought, and the Standard Oil and other old groups did take a natural resource and build up great fortunes. I am finding no fault with that, because that was the system we were developing under at that time, but are the people better served

by the one kind of development or the other? Is it better for this country to have built great, swollen fortunes, such as the Standard Oil Co. and the great head of that company, Mr. Rockefeller, built up? He has been busy trying to give away what he has been taking from the people. Or is it better to develop a natural resource so that the people can enjoy the equity in it as they go along? How many children on the farm and other places that have no opportunity of school would that great money, taken from a natural resource by the Standard Oil, have helped through school, have helped to a better living, more comfortable clothing in wintertime and a better home, if it had been developed on some other line? That is just the thought that drifts through my mind and I just throw it out for what it may be worth.

Mr. HULL. Of course, your answer is very comprehensive, but still there is a lingering doubt in my mind as to whether your organization of farmers, and not only yours but the others, has properly taken into consideration the protection of the people in the future. Are you thoroughly satisfied that if we accept the Ford contract we have done everything we can to protect the people in the future?

Mr. SILVER. Yes; keeping in mind what I referred to yesterday, that there is a little clarifying language we are discussing with Mr. Ford. With that in mind I would say, emphatically, yes. There is no doubt about that in my mind, as indicated not only by my testimony but by the resolutions adopted by our group in convention, etc., after having studied this question; so that I want to answer your question, definitely and emphatically, yes.

Mr. HULL. Of course, another question that will naturally follow—that is whether if we accept this contract we are not doing the very thing you speak of in building up another great fortune?

Mr. SILVER. The difference I have tried to make plain is that the type of mind and the development which we are asking here is on just the reverse of the other great fortunes. We are asking that the waterways be developed on a basis that maintains or protects the public in enjoying the equity. If we make a cheap raw material of power, which the amortization features of this investment do, we are helping all phases of our national life and we are hurrying up a development which ought to be made.

Mr. HULL. Has your organization analyzed the figures that Mr. Hugh L. Cooper furnished the committee, which sought to demonstrate the fact that if we accept the Ford offer as opposed to the offer by the Alabama Power Co. that in reality, in 100 years I think the figures were, that it is close to $2,000,000,000 that we will turn over to Henry Ford?

Mr. SILVER. We do not expect to get any help from the water-power trust on this matter. Now, he often is accused of speaking for that group.

Mr. HULL. But figures are figures.

Mr. SILVER. Yes.

Mr. HULL. And they can be analyzed by somebody. I have not had the time and I do not suppose I am competent to analyze the figures, but if he says if we accept Henry Ford's offer, in 100 years we will be short from one to two billion dollars.

Mr. SILVER. Without going into a real, careful analysis of it, if the Government does just what I suggested yesterday, authorize a bond issue and that bond issue is retired, has it cost the Government anything, and the earnings on the basis of the Ford tender will retire them and pay the interest. I do not care whose figures you take or how they juggle figures; is it possible for any such conclusion to be arrived at by a man who is trying to present what is involved to the public or to any other group? Can it reflect such a conclusion as he arrived at?

Mr. HULL. Of course, I do not know that I care to go into the question of figures, and I suppose before we get through we will have experts analyze the figures and tell us who is trying to deceive us, but somebody is certainly undertaking to deceive the committee on the figures, because, as I understand it, if I have Ford's offer correct, and I suppose he has men who are just as capable of figuring as the Cooper organization, as I understand it, he states that his payments will amortize this entire project, pay back to the Government all that we put in in the future, with 4 per cent; is that your understanding?

Mr. SILVER. That is my understanding; and when the Government has been repaid, it can not lose $2,000,000,000, and it will have the gaining of the taxable property as developed by the operation of this plant.

Mr. HULL. I understand that, but Mr. Cooper says that, taking the same statement, we will be short from one to two billion dollars, and there is a vast discrepancy there in figures, and somebody ought to be able to tell us who is telling the truth.

Mr. SILVER. Yes.

Mr. JAMES. Mr. Silver, were you one of the gentlemen consulted about the wording of section 15?

Mr. SILVER. Yes.

Mr. JAMES. Who else, representing the farmers, was consulted?

Mr. SILVER. Mr. Atkeson, and at the time of the consideration of section 15, to which you refer, part of our executive committee and our legislation committee and some others were with us and went over that measure—Mr. Howard, our president, and Mr. Bradfute, and Mr. McKenzie, and—I do not know that I can name all of them that were present, but there were several of our executive committee and our legislative committee.

Mr. JAMES. Who represented the Grange?

Mr. SILVER. Mr. Atkeson.

Mr. JAMES. Who represented the Farmers' Educational and Cooperative Union of America?

Mr. SILVER. I am not sure whether Mr. Loomis of the Grange was there at the time or not. He was in and out at different times, but whether he was present at that time or not, I am not sure.

Mr. JAMES. Who wrote this language?

Mr. SILVER. I do not know who suggested the original language.

Mr. JAMES. Does that language carry out your ideas, or is that the idea of Mr. Ford?

Mr. SILVER. The matter came to us, of course, in the form of the Ford proposal, and there was a rewriting of part of it, and we still have some matters to debate as clarifying language and not as changing the purposes of the contract. There has been some debate among our group as to just what language most clearly states what is involved here, but we felt at the time that that language was used that it was happy language. We have some suggestions under consideration, as I have twice told the committee, at this time for clarifying it somewhat.

Mr. JAMES. Did you suggest this idea to Mr. Ford or did Mr. Ford suggest it to you?

Mr. SILVER. Which idea, Mr. Congressman?

Mr. JAMES. Section 15?

Mr. SILVER. The form of the original or the first draft, as you might put it, is the form in which it came to us originally, and it was somewhat changed. I do not know that I know just the individual who suggested the language. I do not know whether I have answered your question or not. I want to answer it.

Mr. JAMES. This section provides that the three leading representative farm organizations shall each designate seven members to the board, etc. Was that Mr. Ford's idea to have seven members or was that your idea?

Mr. SILVER. Mr. Ford's original suggestion was that the farmers have representatives on that board. Mr. Ford made that proposal to us.

Mr. JAMES. Yesterday you talked about cooperative distributing of this fertilizer; is there any language that covers that in section 15, and if so, what is it?

Mr. SILVER. Realizing that this is a new development and that cooperative marketing by legal authority is new, although, of course, 10 per cent of the products of the farms of the country are marketed cooperatively, but until recently we had no legal authorization for so doing, and it may not be hooked as definitely as we hope, since the passage of that bill to hook it, and that is a part of the language we have under discussion at this time. The hope and ambition of the farmer and of Mr. Ford is that when this fertilizer is produced, it will be taken by farmer groups for distribution in a cooperative way. We want to not only save in the cost of the production of fertilizer but we want to have all the possible economies in the distribution of it. It is just as important to economically distribute it as it is to economically produce it.

Mr. JAMES. That is your hope, but there is not anything in this proposition of section 15 that has anything at all to do with cooperative distribution, is there?

Mr. SILVER. The contract would not necessarily carry the cooperative distribution, but the farmers can organize other distributing groups without this contract when Mr. Ford delivers it to them, and when we see it is economically produced and is delivered to us we will attend to the distribution.

Mr. JAMES. Mr. Ford's corporation is limited to 8 per cent profit. Do you not think there should be some provision by which the corporation during the 100 years can not farm out territory to certain individuals and then have them farm it out, which they could do unless there was some amendment made to this language? Have you any proposed amendment in mind?

Mr. SILVER. Yes; the language we are are trying to clarify that with has to do with the point you have in mind.

Mr. JAMES. You would like to have whoever buys this property guarantee to manufacture fertilizer, would you not?

Mr. SILVER. We are very much interested in the fertilizer feature We do not think it is the only feature, but we are very much interested in it, and it is one of the big things we hope to accomplish.

Mr. JAMES. Under section 14, how many tons of fertilizer do you think is guaranteed to be produced per annum?

Mr. SILVER. Mr. Congressman, the per ton basis is not the basis that arises in our minds when we talk of fertilizer. While we buy fertilizer by the ton, the plant food in the ton is the real basis; and when he says he will produce a certain amount of a certain kind of commercial plant food, it may be interpreted in a 2–8–2 goods or in a 2–8–3 or a 2–8–4, or it may be in the form of sulphate of ammonia, which we buy and use on our orchards just in the form of sulphate of ammonia, 24 per cent.

Mr. JAMES. How many tons do you think are guaranteed under section 14 as a minimum?

Mr. SILVER. The capacity of the plant, which is estimated at 110,000 tons of ammonium nitrate, which is one of the parts of the complete fertilizer, and the other parts that are necessary to go with that will make up the complete fertilizer.

Mr. JAMES. The amount of nitrogen, as I understand it, contained in that amount of sulphate of ammonia is 190,000 tons, and in 2–8–2 commercial fertilizer the amount is 1,925,000 tons?

Mr. SILVER. In that formula; yes.

Mr. JAMES. And in 3–8–3 commercial fertilizer, 1,283,300 tons, and in 4–8–4 commercial fertilizer, 962,500 tons. Do you not think those figures ought to be included in this proposal, so that we will know definitely about that feature of it?

Mr. SILVER. I want to carry you back just a minute to the testimony of the Bureau of Soils. There is a great amount of fertilizer used, and it is used on quite a few crops, but the fertilizer needs change from time to time. You may not want that same formula, and we want different formulas on different crops. If you specified in this contract certain fixed formulas for them to deliver a certain tonnage by, I wonder if we might not put something in that was hurtful rather than helpful. I am in sympathy with your thought, and we want the greatest output; but if we go to writing it in there in fixed formulas, I wonder if we do not do a hurtful rather than a helpful thing.

Mr. JAMES. Read me the exact language where he agrees to manufacture fertilizer.

Mr. SILVER. Where he agrees to manufacture it at all?

Mr. JAMES. Yes.

Mr. SILVER. I am reading from section 14:

"The company agrees to operate nitrate plant No. 2 at the approxiate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control," etc., which is the usual clause in industry. He says they will manufacture it.

Mr. JAMES. He agrees to manufacture the compound, but can not the compound be used for other things.

Mr. SILVER. Outside of the war-time needs of some of these things, and the explosive and fertilizer elements are largely the same, outside of that, the fertilizer is the great place where all the manufacturers of these chemicals look for the sale of their products. In addition to that, I have the greatest belief and faith that under that language they could not well do any other thing. It refers to fertilizer, and further down it says, "In order that the farmers may be supplied with fertilizers at fair prices and without excessive profits." The whole of sections 14 and 15 refer to the producing and supplying of the farmers with fertilizers at reasonable prices. I scarcely think that any mind can read this section—and I am thinking of the judicial mind that might have to interpret it—and I do not think any mind would read that altogether and say that there was but one purpose that could rightfully be accomplished, and that is to produce and supply fertilizer for agricultural purposes.

Mr. JAMES. Do I understand that Mr. Ford is going to offer an amendment clearing that up?

Mr. SILVER. I think there will be some clarifying language.

Mr. KEARNS. Would your organization accept any proposition or advise the acceptance of any proposition other than one coming from Mr. Ford?

Mr. SILVER. It is a little hard to answer a moot question. I do not know what might be proposed, Mr. Congressman. As it stands at this time, there is no doubt about their viewpoint, and as it has stood up to this time—the Ford tender has been made for some seven months and has been printed and published to the world at large, and to our mind there is nothing comparable with it; and in addition to that, we still go back to the point of this genius of Mr. Ford, which we hope to help along in this situation.

Mr. KEARNS. You or your organization are banking a great deal, then, on the genius of Mr. Ford.

Mr. SILVER. Sure, we bank a great deal on the genius of Mr. Ford along with other things.

Mr. KEARNS. Why; what has justified you in such a belief as that?

Mr. SILVER. Mr. Ford's business life with the farmers has been such that they have a very great amount of confidence in him and in his ability to construct the great manufacturing industry that he has. It took genius to do it, and Mr. Ford has passed the place where he has any selfish need for money.

Mr. KEARNS. So has Rockefeller, has he not?

Mr. SILVER. Yes; but they have led different kinds of lives.

Mr. KEARNS. How is that?

Mr. SILVER. Well, it may be difficult to answer how it is, but it is a fact that they have done it.

Mr. KEARNS. They have both amassed great fortunes.

Mr. SILVER. Yes; by different methods.

Mr. KEARNS. And they have gotten that fortune out of the pockets of the American people.

Mr. SILVER. Yes, sir.

Mr. KEARNS. Both of them.

Mr. SILVER. Yes.

Mr. KEARNS. Mr. Ford, if newspaper reports are true, stated the other day that he had made $1,000,000,000 himself, and he got that out of the pockets of the American people.

Mr. SILVER. Yes.

Mr. KEARNS. That does not indicate he is a great philanthropist, as you said awhile ago, does it?

Mr. SILVER. Mr. Ford has done just exactly what you challenge. He has shown that in his production at all times he has maintained it on the lowest possible level consistent with proper wages and proper living conditions for his people, and has supplied the public with the wares on a basis under what other people have done.

Mr. KEARNS. Do you not think he could have furnished this product to the American people on a much cheaper basis than he has done if he has amassed $1,000,000,000 in the last few years; do you not think he has been charging them a pretty good tariff?

Mr. SILVER. If I read the same article that I presume you refer to, it was a newspaper article——

Mr. KEARNS. Yes.

Mr. SILVER. If I read the same article, I understand he did not plead guilty to having made $1,000,000,000, although it does not make much difference in the point you make, but I just want to call your attention to the fact that he specified he had around $100,000,000 of real estate and $100,000,000 of machinery, and over $100,000,000 of money that might by some means be capitalized and earn on $1,000,000,000. Now, that is a different thing. He has not capitalized and earned on $1,000,000,000.

Mr. KEARNS. I think his exact statement was that his real estate holdings, his deposits in the banks, his personal property of various kinds, and his good will could be capitalized at $1,000,000,000.

Mr. SILVER. Yes; I think that is right. We agree about that.

Mr. KEARNS. Now, do you not believe that if he had had the interest of the American people or of his customers at heart, he could have conducted busi-

ness and exacted a less profit than one that would net him $1,000,000,000 in 10 or 15 years?

Mr. SILVER. You get back to the point and you make the statement that he has netted that. As I read the statement, he has not netted that amount, but I will not contend about that point. He has made several hundred million dollars, according to his own statement, and he has made it in such a way that the people who have bought his wares and consequently paid that money are not unfriendly to him. They have gotten more for their money when they dealt with Ford than when they dealt with somebody else.

Mr. KEARNS. They paid a big tariff on it, however, at that.

Mr. SILVER. At that time, if it had not been for Ford's genius, they would have been worse off. They have been able to pay Ford his tariff, if you want to call it that, or his fortune, if you want to put it the other way, and have still been better off than would have been the case with some of these other groups. We do not feel the same way about it.

Mr. KEARNS. Why do you say that the owner of a Ford machine is better off by having one?

Mr. SILVER. Well, it was a choice with the farmer of whether he had a Ford or went on foot. It was just the choice of walking or riding in a Ford. Of course, we can never hope to ride in a Packard or Pierce-Arrow or something of that sort.

Mr. KEARNS. Of course, we all take off our hats to Mr. Ford for having made this money, but what I am trying to get at is why it is that after he has amassed this great fortune and gotten it out of the pockets of his customers. you can bring yourselves to believe that he is going to produce fertilizer at a cheaper rate for the farmer than anybody else.

Mr. SILVER. If he just does for us in the fertilizer business what he has done in the "flivver" business, he has provided cheaper goods for us at a good standard and at a cheaper price than anybody else has done.

Mr. KEARNS. There are a great many people, and a great many of them owners of Ford cars, who would not agree with you that he has furnished things cheaper for them in the long run. Of course, the original price is cheaper.

Mr. SILVER. We could get into long argument along that line, but I will go back to my statement that farmers would have either been driving their horse and buggy or walking, who to-day are able to own a Ford automobile. He has made the product on a basis of keeping down cost factors so that we have been able to buy them, and, compared with what we would have paid elsewhere, it has been a bargain when we bought them.

Mr. KEARNS. Well, as the owner of two Fords, I can not agree with you.

Mr. SILVER. You had the alternative of buying somebody else's machine.

Mr. KEARNS. Has your organization read and studied the proposition of the Alabama Power Co.?

Mr. SILVER. Yes; they have studied it to the extent that they see there is no provision for fertilizer in the sense in which we feel it should be in there, and to our mind that is a wall right there.

Mr. KEARNS. Getting back to the proposition of fertilizer, why does not your organization insist on some clause being put in this contract by which this Ford company would be compelled to manufacture some kind of standard fertilizer that is used by the farmers?

Mr. SILVER. If you will tell me what a standard fertilizer is——

Mr. KEARNS. I do not know.

Mr. SILVER. No.

Mr. KEARNS. But I know he has not agreed to make fertilizers in this contract. He has agreed to make a certain component part of the fertilizer.

Mr. SILVER. Yes.

Mr. KEARNS. But has not agreed to make fertilizer.

Mr. SILVER. But the commercial plant food, and as to the carrier, we will agree about that.

Mr. KEARNS. Is there not some clause that could be put in there—I do not understand the formulas for fertilizers—but could not your organization, with all the wisdom that is in the organization, and with the knowledge that the members of that organization must have of the manufacture of fertilizer, could they not devise some clause or construct some clause that would compel the manufacture of fertilizer that would be ready for distribution and use by the farmers?

Mr. SILVER. This clause, keeping in mind the reservations that I have once or twice referred to, is satisfactory to the people that use the fertilizer. Then

I will go back to the statement of the head of the Bureau of Soils, who testified very fully on the fact that different analyses of the soils did not give the same results in the crops. I want to say that the handling of fertilizers and soils is a very difficult thing, and as yet there has been no single formula devised or no plan by which we can know ahead of time just what is the most useful thing, or, if we use it successfully one time, we may need to change it at some other time.

Mr. KEARNS. Getting back to my original statement as to this clause in the contract, I understand that in this contract there is not any language in there that would compel him to manufacture a finished fertilizer, is there? That question can be answered yes or no.

Mr. SILVER. I have not made myself plain to you. I want to do it, Mr. Congressman. If you took any one formula and wrote in there that formula as a finished fartilizer, as I believe you have in mind——

Mr. KEARNS. Yes.

Mr. SILVER (continuing). You would limit the use of the fertilizer and the output of that plant to the particular crop and the particular soil that that one formula applied to.

Mr. KEARNS. I understand that.

Mr. SILVER. And consequently you would deny a great many people access to the product of that plant.

Mr. KEARNS. That is just the question I am asking. Can not your organization devise language here that would compel him to manufacture fertilizers, we will say, the finished product, whatever that may be, if he is desirous of making fertilizers for the farmers, so that he may advance the cause of the farmers, rather than the cause of his own company; then could you not get together and put in your contract an agreement by which he agrees to make fertilizers as the needs of the time should demand. I will put it in that way.

Mr. SILVER. The farmers would not want to enter into a contract for 10 years or 100 years based on a specific demand.

Mr. KEARNS. I do not mean a specific fertilizer, but could you not devise language that will compel him to make fertilizers that will be demanded by the farmers from time to time?

Mr. SILVER. And this does specifically provide for the manufacture of the commercial plant food involved in fertilizers.

Mr. KEARNS. Yes; involved in fertilizers, I will admit that.

Mr. SILVER. This provides for that, and the only way to market that and sell it is to sell it in fertilizer.

Mr. KEARNS. But suppose under his contract he made this nitrate and then refused to go any further. How are you going to compel him under this contract to go any further. That is what I would like to know, how you propose to do that?

Mr. SILVER. I think that is one of the features that we can well take with a certain amount of faith and also on the language we have under consideration and have not yet submitted.

Mr. KEARNS. But you are asking us, Mr. Silver, to vote into the hands of Mr. Ford practically $150,000,000 that belongs to the taxpayers, and when we do that we do not want to take too much on faith.

Mr. SILVER. Yes.

Mr. KEARNS. We want something in the contract. In other words, we want it denominated in the bond.

Mr. SILVER. We think there is something in the contract. I do not mean to say that this contract is without force and effect. To my mind I can not think of a manufacturer, I do not care who the manufacturer is, manufacturing and agreeing to manufacture and to keep on manufacturing for 100 years and not keep up his outlet, and there is only one outlet that he can hope to occupy at all times and under all conditions for the output of that plant.

Mr. KEARNS. But under this contract he can sell it to other fertilizer firms, if he wants to, or to anybody else.

Mr. SILVER. That is the point about which we are discussing some clarifying language, and that is one of the points I referred to in answer to one of the other gentlemen. I think we will have a suggestion to make before the hearings are closed that will answer that particular question.

Mr. KEARNS. Do you think you are going to have language in there that will be certain and definite, requiring him to manufacture fertilizer.

Mr. SILVER. We think so. We think we will have language that will not only be entirely happy to us but we trust will be hapy to this committee.

Mr. KEARNS. I think the committee wants to know, if it is going to vote out that amount of money, that the farmers are going to get what they are expecting.

Mr. SILVER. Do not think that the farmers want to take any chance about it. They want to be right sure about it, and they are trying to be sure about it, and they have special committees studying and following up this matter, and they want to know just what you want to know.

Mr. KEARNS. If you are studying the matter along those lines, I think the committee will anxiously await a further report from you on that study.

Mr. SILVER. Before these hearings close, we will have the results of that study brought to you.

Mr. KEARNS. Has your organization ever studied or given any consideration to what this plant would cost to build now? If you should find it in the shape that the Government did a few years ago, when they undertook to build this plant, what would it cost to build it and complete it as Mr. Ford wants it completed?

Mr. SILVER. We have this plant just as it stands not like an interested party would go out and find an unoccupied site on a river bank some place. We approach this as a waste of the war, we might say. Now, we either use it or we do not use it, and it is either used and made an asset of or else it is in a large measure wasted.

Mr. KEARNS. I understand that, but that does not answer my question.

Mr. SILVER. Well, I beg your pardon.

Mr. KEARNS. The taxpayers of the United States have already spent there or had on the first day of last July, $106,000,000 plus.

Mr. SILVER. Yes; whatever the amount may be.

Mr. KEARNS. $106,000,000 plus, so the Secretary of War testified here, or in round numbers $106,000,000. Of course, we will grant that that was done under the stress of war, and that a great deal of that money was wasted and squandered, but the question I would like to have answered is what it would cost to-day to do what the Government has already done down there and to complete the plant as Mr. Ford wants to complete it. How much would that cost?

Mr. SILVER. I do not know.

Mr. KEARNS. Do you not think your organization ought to know how much they are giving Mr. Ford? Mr. Ford agrees to complete it, and he believes it will cost anywhere from forty to fifty million dollars.

Mr. SILVER. Yes.

Mr. KEARNS. And he is to pay 4 per cent on what it costs to complete it.

Mr. SILVER. Yes, sir.

Mr. KEARNS. Therefore, he wants the taxpayers of the United States to give him the $106,000,000 for his use for 100 years without paying anything on it; is not that true?

Mr. SILVER. By the same reasoning, would we not be glad to turn our Navy over to some one who would keep it in good running shape and turn it over to us in time of war? The fellow who did that would not have a bargain.

Mr. KEARNS. But he is going to use this plant in the manufacture of power and he is going to use it to manufacture parts for his automobile, and will possibly manufacture plows, etc.

Mr. SILVER. Sure; but whether business goes good or bad, he has to still keep that plant in shape to produce these needed chemicals in peace time, under this contract, for agricultural purposes, and be ready in time of war to turn it over to the Government as a going concern.

Mr. KEARNS. But is not the cost of that negligible, compared with the money that the Government has already invested down there?

Mr. SILVER. Not according to some estimates of what it would cost the Government to keep it as a stand by. Maj. Burns testified it would cost $2,500,000 to keep it in a stand-by condition, charging depreciation, etc., and if we let it stand as an idle concern in 20 years you have lost it, anyhow.

Mr. KEARNS. Let me ask you this question: If Mr. Ford wanted to go down to Muscle Shoals, and there was nothing built there, but he wanted to go there to build a plant, just as any other business firm would want to do, it would cost him at least $100,000,000 to build the plant the way he wants it, would it not?

Mr. SILVER. No; not according to your statement, because you said that a great deal of money that the Government spent down there was wasted, and I concur in the statement that war expenditures are always wasteful.

Mr. KEARNS. I mean if the plant is completed down there as he wants it, it would cost him at least $100,000.000 to build it from the ground up?

Mr. SILVER. I do not know that I am competent to guess on what it would cost, but it would cost a heap of money.

Mr. KEARNS. Certainly there was not more than $56,000,000 wasted down there, which is cutting it more than half in two.

Mr. SILVER. We are just guessing at that.

Mr. KEARNS. Yes; but we will say that it cost him $100,000,000, and if that is true, the Government is giving him a subsidy of $50,000,000, is it not?

Mr. SILVER. Now, may I put that around the other way?

Mr. KEARNS. You do not like the word "subsidy"?

Mr. SILVER. Wait. I am going to let you use the word subsidy. I did not like the word subsidy when it was first mentioned yesterday, but I am going to put it around the other way, and maybe I will think more of it. What kind of a subsidy is the Government giving at the people's expense to the present manufacturers of fertilizer if they do not do this?

Mr. KEARNS. What kind of a subsidy?

Mr. SILVER. Yes; are they not subsidizing them?

Mr. KEARNS. How is that? I do not understand that. You mean they are paying them exorbitant prices for the fertilizer?

Mr. SILVER. Yes.

Mr. KEARNS. I will agree with you about that, and I will agree with you about that as to practically every manufacturer to-day, and on the same theory we are subsidizing every manufacturer because practically all of them are charging more for their wares than they are justified in charging.

Mr. SILVER. You and I agree about that situation—and this is one place to cure it. That is all. I do not have another word to say on that.

Mr. KEARNS. But do you not think that Mr. Ford ought to pay some interest on this other $50,000,000 that the people are giving him? That is the point. Do you not think he ought to pay 4 per cent interest on more than what it requires to complete this plant?

Mr. SILVER. That is not our belief.

Mr. KEARNS. If he had to build it himself, it would cost him that much money.

Mr. SILVER. I grant you that, and he would build a plant that would be suitable and right for his plans at this time. I understand that he has got to spend millions of dollars there to make that plant the kind of plant he wants to have there.

Mr. KEARNS. You mean millions of dollars in the operation of the plant?

Mr. SILVER. Oh, no; in reequipment and rearrangement, etc.; millions of dollars to put that plant in shape to manufacture in the way he believes it has to be operated to be economical and right to carry out this theory of manufacturing.

Mr. KEARNS. Is not that what he wants the Government to spend this other $50,000,000 for?

Mr. SILVER. No, sir; after it is turned over to him, he will have to spend that money in order to effect the kind of economies he has in mind.

Mr. KEARNS. Do I understand you to say that he is going to spend this twenty-five or forty million dollars?

Mr. SILVER. Steady; I did not use any amount. I said millions of dollars. I do not hesitate to say that in discussing it with him he intimated it might take between ten and fifteen million dollars to make this plant the kind of production plant that he desired.

Mr. KEARNS. Did he mean he would have to spend that much more on machinery?

Mr. SILVER. On equipment and rearrangement of the plant itself to make it the kind of a fertilizer plant he thinks it must be made to do the real trick.

Mr. KEARNS. I have not heard that testimony, and this is the first time I have heard the statement made.

Mr. SILVER. That may be.

Mr. KEARNS. This is the first time I have heard it said that he was going to spend anything on additional machinery. My impression was he wanted the Government to finance the completion of that plant, ready to manufacture nitrates and furnish power, etc., and if I am wrong I would like to know about it.

The CHAIRMAN. His representatives in appearing before the committee gave it as their opinion that Mr. Ford would have to expend thirty or forty million dollars.

Mr. KEARNS. I remember that testimony, but I thought they meant he was going to expend that in carrying on his business.

The CHAIRMAN. Oh, no.

Mr. FIELDS. And with the permission of Mr. Kearns, inasmuch as he says he wants to get the matter straightened out——

Mr. KEARNS. I do.

Mr. FIELDS. The Secretary of War said it would require from one and a half million dollars to ten million dollars for additional equipment of plant No. 2 for the production of the nitrate agreed to be produced by Mr. Ford.

Mr. KEARNS. What is this fifty or sixty million dollars that the Government is to spend there to be expended on?

Mr. SILVER. You have got to finish the dam, and you have got to do a lot of other things. I do not know that I could answer as to the items. You had better have Mr. Ford's engineer tell you about that.

The CHAIRMAN. According to what the representatives of Mr. Ford said, the Government is expected to provide the money for the completion of Dam No. 2 and the thorough building of Dam No. 3, which has not even been commenced at the present time, and the Government engineers say that will take about $50,000,000. Mr. Ford thinks it will take about $42,300,000,

Mr. SILVER. They are talking about the water power in making that statement.

The CHAIRMAN. Yes. On this nitrate plant, the evidence is that Mr. Ford wants to buy that outright. It has cost the Government up to date $67,000,000 and is practically in working order. It will not require a great deal of money to complete it; Mr. Ford, of course, would have to go ahead with it as it is, but he would like the Government also to buy the flowage rights and the water rights necessary in the construction of Dam No. 3. Of course, the amounts vary in the different calculations of the engineers. The Government engineers are a little higher and provide a little more money than Mr. Ford's engineers. That is the situation that the plant is in at the present time, and that is the testimony before the committee as I recall it.

Mr. SILVER. Yes.

Mr. KEARNS. The Air Nitrates Corporation claims to have certain rights in this plant. Has your organization ever investigated that question?

Mr. SILVER. I do not think our organization has ever investigated as to that. We have the expression of the opinion of the Judge Advocate General, and aside from that they have not done anything about it.

Mr. KEARNS. Would the farmers whom you represent want this contract entered into with Mr. Ford if they knew how we stood with this Air Nitrates Corporation?

Mr. SILVER. Our people are inclined to take the opinion of the Government officials and of the Judge Advocate General to the effect that this is not a valid obligation and that they have no claim.

Mr. KEARNS. I think myself they have no claim, but I wanted to know what your organization thought about it.

Mr. SILVER. So we simply dismiss it with that thought in mind.

Mr. MILLER. Mr. Silver, you went into something of the philosophy of the economic life of the agriculturist.

Mr. SILVER. Yes.

Mr. MILLER. One thing basically that is the matter with the philosophy of the agriculturist or the system under which we do business is that under the present-day methods whatever he buys the other man fixes the price.

Mr. SILVER. Yes.

Mr. MILLER. And whatever he sells the other man fixes the price.

Mr. SILVER. Very true.

Mr. MILLER. In other words, he differs in that respect——

Mr. SILVER. From any other group.

Mr. MILLER (continuing). From any other producer in the world.

Mr. SILVER. That is true.

Mr. MILLER. The Congress undertook to overcome that, as near as it could be done by legislation, by providng for what is known as the cooperative marketing principle.

Mr. SILVER. For which we are very appreciative.

Mr. MILLER. And which, probably, may in future years develop into a corresponding independence of the agricultural producer along the lines of other producers. That is the hope?

Mr. SILVER. Yes.

Mr. MILLER. I think there is no well-poised man in this country, Mr. Silver, but what is interested intensely in agricultural production.

Mr. SILVER. I think that is true.

Mr. MILLER. And friendly toward it, because it is the basic support of the human family. Now, coming down to this concrete Ford proposition, you spoke about your belief that there was a sort of element of philanthrophy involved in it, and that Ford is going to do this wonderful thing for the farmers in the production of cheap fertilzers; that is right, is it not?

Mr. SILVER. Yes.

Mr. MILLER. I suppose you have observed that the net result of this contract is that the Government is financing Mr. Ford at the rate of 4 per cent interest, but the product the farmer has to buy he buys at 8 per cent interest?

Mr. SILVER. Not to exceed that.

Mr. MILLER. In other words, Mr. Ford is charging double the amount of interest to the farmer that he pays to the United States Government. There is not much philanthrophy in that, is there?

Mr. SILVER. He does not necessarily charge the 8 per cent under the contract.

Mr. MILLER. Tell me where he does not necessarily charge that. I will take issue with you right on that.

Mr. SILVER. It says not to exceed that amount.

Mr. MILLER. Not to exceed 8 per cent.

Mr. SILVER. Yes.

Mr. MILLER. And you folks have a committee to see that it does not exceed that.

Mr. SILVER. That they do not charge in excess of that.

Mr. MILLER. Mr. Ford then is privileged in all that provision of the contract in which you folks are bound, that he can make 8 per cent out of his money.

Mr. SILVER. Now, so far as that——

Mr. MILLER (interposing). That is right, is it not, Mr. Silver?

Mr. SILVER. Just a word. So far as——

Mr. MILLER. Is not that right?

Mr. SILVER. So far as——

Mr. MILLER. That is all I desire to ask, Mr. Chairman.

The CHAIRMAN. As I understand it, Mr. Silver wants to make some explanation.

Mr. MILLER. I asked Mr. Silver twice if that was not right and he did not and would not answer my question, so I am through

Mr. SILVER. I am trying to answer and I want to answer, but I think that neither yes nor no would be a complete answer, sir.

The CHAIRMAN. I think under the rules of evidence you would be entitled to say yes or no, and then explain what you meant by your answer; I think this question can be answered in that way.

Mr. SILVER. I would say no, then, as to that.

The CHAIRMAN. Then you want to make an explanation of your answer?

Mr. SILVER. Yes.

The CHAIRMAN. I think you would have a right to do that.

Mr. SILVER. There is nothing here requiring the payment of the full 8 per cent, and Mr. Ford, in conversation with me, said, "I would not give that for it to make money out of it," speaking of the fertilizer end of the proposition at Muscle Shoals. "My business has been built up largely by dealing with the farmers of this country."

If I can serve them, and if I can develop a great agricultural foundation there that will be good for all people, I will think my life has been worth while. I do not feel that making money alone makes a good citizen. Now, just a moment further. The 4 per cent which the gentleman refers to is a part of the cost of manufacture, and no interest on the profit. It goes in on that basis, what it costs him, and not as a part of his profit.

In addition, the 4 per cent which the gentleman refers to is invested in water power, in the dam, and that is permanent. This fertilizer is manufactured with machinery on which there is a different degree of depreciation involved. The fertilizer in its cost will just carry the 4 per cent charge against that part of it, whatever part is contributed by it.

Mr. CROWTHER. Mr. Silver, referring to the statement you just made about Mr. Ford producing this fertilizer, let me call your attention to the statement on page 29 of the tesimony of Secretary Weeks, which you will find on examination of Mr. Mayo's testimony was not disputed; in fact, he rather acquiesced in the statement. The Secretary says, "but I did suggest that it seemed to me

that there should be a forfeit in case of the failure to carry out that part of the agreement, because in my conversation with Mr. Ford I said to him, 'will you guarantee to continue to manufacture fertilizer during the life of this contract,' to which he replied that he would not. I said, 'will you agree to invest a certain definite amount of money in the manufacture of fertilizer,' and he said he would not. Now, of course, he does, in effect.

"I said then, in effect, 'You might stop the manufacture of fertilizer in five years or in any other time to the great disappointment of the people down there,' and he said: 'Of course, I am going to stop if I can not manufacture it profitably.'"

Has Mr. Ford denied those statements, or have any of those who represent him here made any refutation of those statements?

Mr. SILVER. Not to my knowledge. But if all of that is true, if he should arrive at the place where he discontinues, the purpose would have been accomplished, because if the other groups that are now charging such outrageous prices come in and undersell him, make it so he can not operate, we would have scored a great victory.

Mr. CROWTHER. You are not afraid that anybody would undersell Henry Ford, are you?

Mr. SILVER. Not a bit of it; so he will go right on.

Mr. CROWTHER. Then why suggest it as a contingency?

Mr. SILVER. That would be the contingency under which he would discontinue the manufacture; but I am not uneasy about his discontinuing.

Mr. CROWTHER. In making the statement you appeared to be, but you qualified it immediately. The statement you read yesterday, in addition to its reference to fertilizer, spoke of the development of metals. That was in something you put in the record yesterday, among other things. To what does that refer? Have you any knowledge as to what Mr. Ford intends to develop, so far as metals are concerned, in that particular territory?

Mr. SILVER. I do not know that I have any such definite information that would justify me testifying in reference to that here. I would rather that Mr. Ford or his representative testify to the committee in reference to that. But in conversations with him I could not help but having the impression and belief, and knowing that if he develops manufacturing industries he will need metals, it is my impression that he would develop them. And I illustrated in that way how there could be great savings made.

Mr. CROWTHER. With what metals?

Mr. SILVER. I mentioned steel yesterday in connection with the Pittsburgh plus price, and I used other illustrations. I showed how those things could be made cheaper.

Mr. CROWTHER. Do you mean to tell the committee that he contemplates making steel there?

Mr. SILVER. I used those illustrations in connection with what I said, and I illustrate to-day again with them. I have certain beliefs, but I would not want to testify to this committee in any way that would commit Mr. Ford to anything, because I have no information that would warrant me in going that far.

Mr. CROWTHER. You spoke of one of the difficulties that had confronted the farmer and made his situation almost intolerable, and I believe you said that the protective tariff was one of those things?

Mr. SILVER. I said protective tariffs were class privileges, and they may or may not be justified, but that the tariff is a class privilege just the same. I qualified it by saying I did not mean anything unfriendly, nor did I wish to get into a discussion of the tariff question, but I simply said it was a class privilege that may or may not be justified.

Mr. CROWTHER. Is it not true that the recent improvement in the prices of wool for the sheepman and cattle for the cattleman, and in the dairy products, and the prices of grain at the present time are due very largely to the passage of an emergency tariff bill constructed and passed especially for the benefit of the agricultural interests and at their request?

Mr. GARRETT. Mr. Chairman, if you are going to the tariff proposition——

The CHAIRMAN (interposing). This committee is supposed not to be a political committee.

Mr. GARRETT. But the question asked is a direct political question, and it has been tested out in this very Congress.

The CHAIRMAN. I will tell you, Mr. Garrett, in the past when the Democrats claimed the tariff was doing certain things, we had gotten to a point where

the rations of the men in the Army were double, and there was no tariff involved. But the Democrats, however, made the fight that everything was governed by the action of the tariff. The committee did not look upon that as a political question.

Mr. GARRETT. I know, Mr. Chairman, but the specific question the gentleman asked for the record here, in order to show what the witness's answer would be, was in regard to the advance in the present price of certain farm products and the relation of that to the emergency tariff. For the record of this committee to show that and not to have the record show the decline of all those things immediately following the passage of that bill and for months afterwards is unfair, it seems to me, having the belief in regard to that question that I have.

Mr. GREENE. But you are doing it now.

The CHAIRMAN. They would be justified——

Mr. FIELDS (interposing). Mr. Silver having qualified his statement yesterday, in reference to the tariff, by the qualifying statement that a protective tariff might or might not be justified, a direct political question would not be warranted, because no man can tell from his statement whether he is a protectionist or not.

The CHAIRMAN. I do not think so. That is why I raised no objection to the question.

Mr. GARRETT. I raise no objection to it, and the gentleman who asked the question can suit himself.

Mr. CROWTHER. I have tried to ask a few questions without making speeches in the record.

Mr. KEARNS. Let us have the question read, so that we will know just what it is.

(The question referred to was read, as follows:)

"Mr. CROWTHER. Is it not true that the recent improvement in the prices of wool for the sheep man, and cattle for the cattle man, and in the dairy products, and the prices of grain at the present time, are due, very largely, to the passage of an emergency tariff bill constructed and passed especially for the benefit of the agricultural interests, and at their request?"

Mr. SILVER. There is a difference of opinion among our people on that question.

Mr. CROWTHER. It does not interfere with the concrete result that has been attained?

Mr. SILVER. It does not change the fact at all.

Mr. CROWTHER. Is it not true, along this particular line, in connection with these statements which you have made——

Mr. SILVER (interposing). Is not that true?

Mr. CROWTHER. That the agricultural interests you represent here, as you say, are asking under the permanent tariff bill even greater protection and higher rates than they have under the emergency tariff bill; is that not a fact?

Mr. SILVER. I want to answer that question, but, Mr. Congressman, unless we took the rates as a whole and averaged them, I do not see how I can answer it. My belief is that, in the first place——

Mr. CROWTHER (interposing). You need not answer if you do not want to.

The CHAIRMAN. He was proceeding to answer your question.

Mr. SILVER. No farm groups appeared and testified in reference to the emergency tariff bill, but all of our people were appreciative of the interest Congress took in being helpful. But in connection with the latter tariff we did appear at the hearings, and that was the only instance where we did appear. We asked for certain things to be done. Just how you can compare what we asked for in the hearings at which we actually appeared with the hearings at which we did not appear, I do not know. I can not see how that can be done.

Mr. CROWTHER. I just want to make note of the fact that what you suggest is in the interest of certain classes and has the spirit of class legislation, of preferential legislation; that some legislation is being sought by the agricultural interests, as was exemplified by Mr. Miller's suggestion regarding the farmers' cooperative act, in which the farmers receive exemption from the usual penalties as regards restraints of trade and such things. That is what is provided in the farmers' cooperative act. You are exempted from the penalties that are charged against other organizations that are built up for the purpose of developing their business; is that not true?

Mr. SILVER. No; I do not so understand it.

Mr. CROWTHER. I understand the farmers are exempted under that act.

Mr. SILVER. The farmer has a different understanding. The farmer does not believe he has class or special legislation in that matter. He does not believe he is exempted from the antitrust legislation. He does believe that under the procedure provided there his rights are clarified, but he has no rights above and beyond what other groups have.

Mr. CROWTHER. That is the general understanding of the provisions of the bill, and I think the language is fairly specific in regard to that.

You made a statement regarding electric propulsion of railroads, in which you said that the freight cars moved 14 miles a day as against 7 miles a day under steam propulsion. What electrification of the railroads do you know of that warrants that statement? Does that include only one railroad?

Mr. SILVER. I quoted that specifically yesterday.

The CHAIRMAN. I think, if you will pardon me, in order to save time, the witness testified that it was in connection with some road down here in Virginia.

Mr. SILVER. I testified in reference to the Norfolk & Western Railroad in West Virginia, as to pulling over a high hill, and to the long operations, over 700 miles, of the Chicago, Milwaukee & St. Paul road. I read that specifically into the record.

Mr. CROWTHER. You also made the statement that the farmers pay four-sevenths of the freight charges in this country?

Mr. SILVER. Yes; I got that from Mr. Thorne's testimony before the Interstate Commerce Commission.

Mr. CROWTHER. On what do they pay that? They do not pay the freight on everything grown, do they?

Mr. SILVER. Of course they do; who does pay it?

Mr. CROWTHER. The man who buys it, does he not?

Mr. SILVER. He gives the farmer a check, less the freight charges. Then, when the farmer buys something they ship it to him collect, and he pays at the other end.

Mr. CROWTHER. I have bought a good many cars of barley in my time, and we always paid the freight.

Mr. SILVER. You took it out of the market price.

Mr. CROWTHER. No; we did not.

Mr. SILVER. The farmers do not understand it that way; they may be wrong about it.

Mr. CROWTHER. What State are you from?

Mr. SILVER. West Virginia.

Mr. CROWTHER. I live in New York, and we pay for everything we get there.

Mr. SILVER. There are some mighty good people in New York State, but we are often not happy with the price paid on the New York market, but if you did not pay for it at all we would be most unhappy.

Mr. CROWTHER. When we want to build anything, we raise the money, and we do not ask the Government for a penny. We raised $200,000,000 with which to build ourselves a canal up there, and we did not ask the Government for a cent.

Mr. SILVER. It was at a hearing on that matter the other day.

Mr. CROWTHER. You spoke of the necessity of fertilizers and the fact that our farms would soon be deserts if something of that kind was not done. In that connection, as I remember, Dr. Whitney testified that the people in several of the European countries do not use fertilizers at all, use nothing except the natural fertilization, and the method of rotation of crops, and that their greatest faith was in their oldest soils. How do you account for that? Is there something lacking in our understanding of the development of the soil of this country?

Mr. SILVER. We have been mining our soils and we have been taking the fertilization out of them at a greater rate than we have replaced fertilizers, greater, possibly, than any other country in the world.

Mr. CROWTHER. You also recollect that he made a statement that after 10 years of fertilization of the soils by synthetic products, they found a growth in the production; that although during the first 10 years there was a gradual growth in the productivity of the soil, after that 10-year period had elapsed it went down in corresponding ratio to the amount of the soil that had no fertilizer.

Mr. SILVER. That is if we use nothing but the synthetic fertilizers; but if you use what you get from the legumes you will have a permanent building up of the soil.

Mr. CROWTHER. You were testifying yesterday in reference to the high cost charged by the manufacturers of fertilizers, and in discussing that you spoke of

the probable costs at a plant where ammonium nitrate is produced, and you spoke of the other products. Then you figured that up to about $18 or $20 and told us that the price is $48 or $50. Do you think that is a fair comparison, taking the cost of two or three ingredients of the fertilizer and comparing that with the final cost of the finished product?

Mr. SILVER. That included all of the ingredients, plus the labor which made up the finished product.

Mr. CROWTHER. What percentage of the cost, generally, in the case of a finished material, is represented by the labor cost?

Mr. SILVER. I allowed four or five dollars, which is more than it costs us to make fertilizer.

Mr. CROWTHER. What do you mean when you say "us?"

Mr. SILVER. The farmers. We mix fertilizer ourselves sometimes.

Mr. CROWTHER. There was a good deal of criticism on your part in the suggestive statement you made regarding what you called the vicious propaganda distributed around the country against the Ford proposition.

Mr. SILVER. Opposing the development of the Muscle Shoals proposition?

Mr. CROWTHER. Has not that been pretty well or about balanced by the same type of propaganda that has been put out in favor of it and against all the other interests? Do you not think that is about a 50–50 proposition?

Mr. SILVER. There is a difference, is there not, in doing a constructive, helpful thing in developing our national life and in preventing it being done?

Mr. CROWTHER. Of course, that would be discussed from the individual point of view.

Mr. SILVER. Unfortunately——

Mr. CROWTHER (interposing). As to how much of a constructive undertaking this is and how much advantage it is going to be for the agricultural interests of the country is shown by the statement I read at the beginning of my questions as to Mr. Ford's position in reference to the matter, and which has not been denied on behalf of Mr. Ford, that if he could make these things at a profit, he would make them, and if he could not, he would not make them. That is all there is to it. Are you going to put qualifying language in there and make a hard and fast clause that will make it impossible for Mr. Ford to make any such statement as that again, that whenever it does appear to him to be profitable he is going to quit the manufacture?

Mr. SILVER. Of course, we have come to the committee with certain language that we have agreed on, and the committee will have this proposition before it, to decide whether it does or does not want to include it.

Mr. CROWTHER. Do you intend to offer something of that sort?

Mr. SILVER. We will submit what we think will cover the case, so far as the farmer is concerned.

Mr. CROWTHER. Speaking of constructive and destructive methods, you criticized Mr. Rockefeller and held him up as the very antithesis of Mr. Ford, or you held up Mr. Rockefeller's methods as the very antithesis of Mr. Ford's proposition. Is there not some credit at least to be given Mr. Rockefeller's genius in the development of the business he is engaged in?

Mr. SILVER. I think he has great genius. I did not mean to reflect on Mr. Rockefeller's ability. I was simply illustrating the attitude of the two men toward the public.

Mr. CROWTHER. What is the difference in their attitude toward the public?

Mr. SILVER. I tried to make that plain.

Mr. CROWTHER. What has Mr. Rockefeller done that has been detrimental to the public?

Mr. SILVER. He has taken a great natural resource and built up a great fortune, and the methods he used, according to the prevalent belief of the public mind, have been questionable; but they do not question Mr. Ford's methods at all.

Mr. CROWTHER. They do not? Do you know how much Mr. Ford took out of the War Corporation profits that were granted under the Dent Act for what was coming to him?

Mr. SILVER. I do not.

Mr. CROWTHER. You do not know anything about that?

Mr. SILVER. No.

Mr. CROWTHER. I hope to put a photostatic copy in the record in regard to that particular matter to offset some of the statements you have been making in regard to the suggestion about Mr. Ford's philanthropic interest manifested in connection with this particular matter, and at other times. You alleged in a direct statement made by you that Mr. Cooper, the engineer who

appeared before the committee the other day, spoke for the Water Power Trust. By what authority do you make that statement?

Mr. SILVER. I would repeat the same language; that is commonly talked about.

Mr. CROWTHER. Oh, well, that is hardly the explanation one would expect from you regarding a statement of that severity of character regarding a man's standing, or with reference to his services and his appearance as a witness. Have you no authoritative backing for that statement?

Mr. SILVER. If you wish me to, I will file in the record just what official connections I can find which will show the company he keeps.

Mr. CROWTHER. I would be glad to have you do that, and file it directly under the question I asked you, with the statement that this is your explanation of the question in connection with your direct charge that he is the representative of the Water Power Trust.

Mr. SILVER. All right, sir. (See Appendix, p. 1146.)

Mr. CROWTHER. And not have it so that it will appear generally in there, but have it come directly under the question I asked you. I do not know who Mr. Cooper is, but he appeared to be a very competent witness. He was one of the very few men who apparently knew just what he was talking about.

Mr. SILVER. I think he is a very able man.

Mr. CROWTHER. Yes; I think he is. You spoke of the capacity of this plant down there, which you said was going to be operated, according to the contract, to its capacity of 110,000 tons of ammonium nitrate. It has been testified that in order to get that plant in such condition that it would produce ammonium sulphate it would be necessary to put in about $1,500,000 additional in plant No. 2. That is the testimony of the Chief of Ordnance and several of the other expert witnesses who have testified before the committee. That does not compare very favorably with your estimate of ten or fifteen or sixteen million dollars that would probably be spent on this plant to produce ammonium sulphate.

Mr. SILVER. There may be some difference of opinion on that.

Mr. CROWTHER. It is now an ammonium nitrate plant, and it has been testified that it would require about $1,500,000 to put in the sulphuric acid unit. You say you use ammonium sulphate in the free state on your orchards?

Mr. SILVER. Yes; that is right.

Mr. CROWTHER. You use that in its free state. If we were to produce that alone, that is the only thing which in the contract is agreed upon as to the production of the equivalent of 110,000 tons of ammonium nitrate——

Mr. SILVER (interposing). Will you say that over again?

Mr. CROWTHER. In the contract the provision is that the plant shall operate at the capacity of the plant, which is 110,000 tons of ammonium nitrate a year?

Mr. SILVER. Yes.

Mr. CROWTHER. That is the equivalent of just short of 200,000 tons of ammonium sulphate. Suppose he produces that according to the contract, then there will be 190,000 tons of ammonium sulphate. Suppose he just makes that, and you could use it on your orchards. He does not agree to make a balanced fertilizer that would be recognized as a plant food.

Mr. SILVER. Of course, that is a plant food; it can be used on some plants.

Mr. CROWTHER. That would really comply with the contract, would it not?

Mr. SILVER. For the production of nitrogen and other fertilizer compounds?

Mr. CROWTHER. Yes.

Mr. SILVER. He would not have complied with the contract until he had produced other fertilizer compounds.

Mr. CROWTHER. He might produce a ton a year; that would comply with that sort of a contract. He might produce a minimum quantity, because there is nothing stated as to the quantity of other fertilizer compounds; it just says to the capacity of 110,000 tons of ammonium nitrate, which is the equivalent of approximately 190,000 tons of ammonium sulphate.

Mr. SILVER. That is the capacity of the plant.

Mr. CROWTHER. Is there any other machinery to be provided there, or does the contract contemplate the installation of any other machinery in preparation for the manufacture of any other kind of fertilizer compounds?

Mr. SILVER. That is what he is going to spend the additional millions for.

Mr. CROWTHER. You say that is what he intends to spend the additional millions for?

Mr. SILVER. Yes; he will do lots of things, perhaps, that are not in the contract. He is going to do things; he would not make the great investment he is going to make if he were going to break the contract.

Mr. CROWTHER. Do you think he would make such an investment if the total horsepower was to be limited to another 100,000 horsepower over the amount of primary horsepower to be developed at dam No. 2 now?

Mr. SILVER. The only way by which I can judge what he will do is by his tender. He states the conditions.

Mr. CROWTHER. He does not agree to do anything.

Mr. SILVER. I have no authority to speak for Mr. Ford.

Mr. CROWTHER. If you have not had some vision or some assurance of what may be accomplished, how can you in good conscience advocate before this committee so strongly the taking up of this proposition? You surely must have at least some vision or some idea which you must have gained from your conversations with him, even though you may not have any specific knowledge, as to the realization of these things you have been talking about. You have paid a very glowing tribute to Mr. Ford's genius, but you can not hitch his genius into a contract. You have some other impossible language in there and you might get a clause in there to the effect that the farmers may have cheap fertilizer, and believing in the genius so far displayed in business operations by Mr. Ford, we hereby subscribe ourselves to do such and such a thing.

Mr. SILVER. If you contract with genius and he undertakes to do a thing you are certainly hooking genius up into the carrying out of the contract.

Mr. CROWTHER. Yes; but ordinary genius is largely 95 per cent perspiration, and most of the time hard work. Are you a farmer?

Mr. SILVER. I can qualify there; I am a farmer.

Mr. CROWTHER. With that I will close, Mr. Chairman.

Mr. WURZBACH. Mr. Silver, what is your idea about requiring security of Mr. Ford or this company he is going to form in the event of the acceptance of this offer; that is, in the performance of all obligations to make the payments as provided for, of 4 per cent, and the amortization payments and the obligation to make fertilizer? What is your idea and the idea of the organizations you represent with reference to requiring security or guarantees for the faithful performance of those obligations?

Mr. SILVER. I have no suggestions, speaking for our people, in reference to that matter of additional pledges, other than what he makes in this contract.

Mr. WURZBACH. What security do you think this offer now furnishes to the Government and to the farmers?

Mr. SILVER. It certainly carries security with it, if this tender is accepted; if he invests a great amount of money he must keep it in good faith, or legal procedure will lie against him or his company. He contracts with the Government to do certain things, and then section 18 of the contract provides "as a method of procedure in the event of the violation of any of the terms of this proposal or any contracts made in furtherance of its terms, the company agrees that the Attorney General may, upon request of the Secretary of War, institute proceedings in equity in the district court of the United States for the northern district of Alabama, for the purpose of canceling and terminating the lease of Dam No. 2, or Dam No. 3, or both of them." He has a great investment there, and he must keep not only good faith but he must live up to his contract.

Mr. WURZBACH. That is what he obligates himself to do. I understand that part of it.

Mr. SILVER. The penalty of cancellation is provided.

Mr. WURZBACH. You think that is the only penalty, the cancellation of the contract?

Mr. SILVER. It would seem to me if you canceled the lease and took away the water power you would have done plenty. If you take away the water power, what power would he have with which to operate these industries?

Mr. WURZBACH. He might violate his contract before he had put up any very valuable improvements. Do you not think there ought to be some additional security, certainly covering the period after the death of Mr. Ford?

Mr. SILVER. The contract binds his estate and binds the company or its successors. It carries right on through.

Mr. WURZBACH. If there was no violation up to the time of his death?

Mr. SILVER. You could proceed against the company after that.

Mr. WURZBACH. What is the company? That is what I am trying to get at. We do not know whether this will be another $1,000 corporation like the Air Nitrates Corporation, or a $5,000 or $10,000 corporation. Do you not think we

ought to have some assurance from Mr. Ford that a company will be organized with a certain amount of paid-up capital stock, or give some bond to the Government that he will or that the company will faithfully perform the obligation assumed in this offer?

Mr. SILVER. To my mind, when he says here "violation of any of the terms," that is sufficient protection. Now, then, his engineer testified that he is going to invest $30,000,000 or $40,000,000 or $50,000,000, whatever the least figure may be.

Mr. WURZBACH. What is the least figure?

Mr. SILVER. Thirty or forty million dollars.

Mr. WURZBACH. He would not invest that in the next three or four years, certainly not during the time the Government is expending its $50,000,000. During that time he would not have expended that?

The CHAIRMAN. Will you allow me to make this suggestion? I understand Mr. Ford has come to some conclusion about the amount of money that the company ought to be organized for, and I think his representative will be willing to come before the committee and make some statement in regard to that.

Mr. WURZBACH. That has always been the big question, in my mind, and I shall be very glad to hear the statement of Mr. Ford's representative.

(Thereupon the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

The CHAIRMAN. We will continue from where we left off when we recessed at noon, and Mr. Fields will ask you some questions, Mr. Silver.

STATEMENT OF MR. GRAY SILVER—Resumed.

Mr. FIELDS. Mr. Silver, Mr. Miller referred to the fact that Mr. Ford was proposing to charge an 8 per cent profit, or not to exceed an 8 per cent profit, on his manufactured fertilizer product at Muscle Shoals, whereas he was only paying 4 per cent upon the money. The farmers of the country thoroughly understand, do they not, that there is a difference, and in the nature of things must necessarily be a difference, between the profit of manufacture and the profit in lending money, by reason of the hazard in the former and the security in the latter?

Mr. SILVER. The farmers will not be confused about that.

Mr. FIELDS. It seemed from the question that he was attempting to combine two propositions that you can not combine at all because of their very nature.

Mr. SILVER. Yes; he was confusing the interest on the Government's debt, which goes in as a part of the cost and which will be charged into the manufacturing in making up the price, with the manufacturing profit in the sale.

Mr. FIELDS. Mr. Kearns has referred, as other members of the committee have, to the fact that there was nothing in the contract to bind Mr. Ford to manufacture so much complete fertilizer, which I think you very thoroughly explained.

Mr. SILVER. Yes.

Mr. FIELDS. But it seems from the questions that have been propounded that some gentlemen have not gotten the fertilizer proposition clearly in their minds. It seems that they look upon the bag of completed fertilizer that they refer to as containing 100 per cent plant food, and thereby they become confused about the difference between the plant food in a bag of fertilizer and the bag of fertilizer itself.

Mr. SILVER. Yes.

Mr. FIELDS. We will take this bag of tobacco I have here, which belongs to my friend Mr. Quin, as an illustration, and we will say that that represents a 100-pound bag of 2–8–2 fertilizer, the complete fertilizer that they refer to. I use 100 pounds because it is more easily figured out, while, of course, the fertilizer, as a rule, is packed in bags of 125 or 150 or 160 pounds. We will say that this bag contains 100 pounds of 2–8–2 complete fertilizer. That would mean 2 per cent of nitrogen or ammonia.

Mr. SILVER. Yes.

Mr. FIELDS. Eight per cent of phosphoric acid, and 2 per cent of potash, which would be 12 pounds or 12 per cent of plant food.

Mr. SILVER. Yes; out of the 100 pounds.

Mr. FIELDS. Yes; which is the only plant food value in the 100 pounds.

Mr. SILVER. Right.

Mr. FIELDS. The remainder of it, 88 pounds, is filler.

Mr. SILVER. Yes.

Mr. FIELDS. Which may be made of sand or various other things, and has no plant-food value and is only dead weight. Its only value is the convenience to the farmer in applying it to the soil under our present methods of application to the soil.

Mr. SILVER. Yes; that is right. We have to pay freight on it and there is no advantage in any way except that is the form we get it in.

Mr. FIELDS. Therefore, approaching this from the standpoint of plant food in which the farmer is interested, because he is not interested in the dead weight, because it brings no value, we might then refer to the Muscle Shoals proposition as a plant-food proposition instead of a fertilizer proposition.

Mr. SILVER. Yes.

Mr. FIELDS. Then, if Mr. Ford manufactures there 190,000 or 200,000 tons, in round numbers, of ammonium sulphate, which is a plant food, it is fair to assume, first, that he is going to market it.

Mr. SILVER. Yes; or why would he manufacture it.

Mr. FIELDS. It would be unfair to assume he was going to manufacture it and throw it into the river, as I suggested the other day.

Mr. SILVER. Yes.

Mr. FIELDS. He must continue under the terms of his contract to produce it.

Mr. SILVER. Yes, sir.

Mr. FIELDS. Then he must find a market for it. What is its peace-time market other than as a plant food?

Mr. SILVER. Fertilizer is the great market.

Mr. FIELDS. It is plant food, then?

Mr. SILVER. Certainly.

Mr. FIELDS. Then I ask what is the peace-time demand for that product other than as a plant food? It is very light, is it not?

Mr. SILVER. It is very small, practically none.

Mr. FIELDS. Then, in specific terms, the contract provides for ammonium nitrate and other fertilizer products, and we have there a basis of 190,000 or 200,000 tons of plant food in the form of ammonium sulphate to start with, and we also have another provision in the contract which refers to other fertilizer products.

Mr. SILVER. Yes.

Mr. FIELDS. And if Mr. Ford produces the amount of phosphoric acid necessary to take its place along with this amount of ammonium sulphate, the farmer then has gaind that much additional.

Mr. SILVER. Yes.

Mr. FIELDS. And if he produces the potash necessary to take its place along with this, he has made an additional gain.

Mr. SILVER. Correct.

Mr. FIELDS. That was my understanding of the proposition, and I wanted to know whether my understanding was right or wrong.

Mr. SILVER. That is right.

Mr. FIELDS. I inferred from one question propounded by Mr. Crowther that he had the impression that the natural fertilizer referred to by Dr. Whitney might be had by the farmer without any cost to him. I agree with Dr. Whitney that it is probably the most valuable fertilizer that we can have, but I would not agree with Dr. Crowther—or my understanding of his statement rather—that the farmer could get it without cost. In fact, in many instances, is it not the most expensive fertilizer per acre we could possibly get?

Mr. SILVER. It is the most expensive.

Mr. CROWTHER. Mr. Chairman, I was interrupted and I beg to interrupt there, because I made no such statement as that.

Mr. FIELDS. I referred, Mr. Chairman, to my understanding of Mr. Crowther's statement. I did not quote it as a positive statement, but as my understanding of his statement, and my remarks will show that in the record.

Mr. SILVER. The plowing up of a field and sowing it in a legume, whether it be cow peas or soy beans or alfalfa or whatever it may be, is an expensive process, and costs a great deal of money for the amount of nitrogen that you may capture from the air in that way. That is nature's way, and we are doing a great many things different from the way nature does them, in order to accomplish the same end. We are now setting up a machine or factory to extract this material from the air and get it in what we hope is a cheaper form and in very much greater volume, because if you cut down the production of food

stuffs or the acreage of foodstuffs until you can maintain the soil by the method of crop rotation that will very materially reduce the supply of foodstuffs and raw material for clothing.

Mr. FIELDS. And the farmer of limited means who is unable to buy the seed and plow the soil and plant the crop for fertilizer only, in the absence of commercial fertilizer, would be unable to get fertilizer at all.

Mr. SILVER. Yes; that is true.

Mr. FIELDS. I realize, Mr. Silver, that a discussion of the question of a subsidy is not, possibly, within your line of thought, because you are here representing the agricultural interests, but since this question has been taken up with you and certain statements made in the record I am anxious to see if we farmers can arrive at an understanding of the question of the subsidy that has been charged by some of the witnesses and some of the members of the committee. The representative of the Air Nitrates Corporation who appeared before the committee charged that if the Government sold this property to Mr. Ford it would extend to Mr. Ford a subsidy. We can understand, can we not, that if the Air Nitrates Corporation should buy all or any part of that property at the same figure offered by Mr. Ford it would receive the same subsidy, conceding that it is a subsidy, that it is objecting to the Government extending Mr. Ford?

Mr. SILVER. Certainly.

Mr. FIELDS. We can understand that?

Mr. SILVER. There is no doubt about that.

Mr. FIELDS. Then, for argument's sake, we will concede that there is a subsidy to the purchaser of these war materials. First, the Government had upon hand at the close of the war many billions of dollars of property that was declared surplus. Now, the farmers of the country do not want the Government to keep that property that is not needed by the Government and incur the expense of its maintenance. The farmers, like everybody else, want the Government to dispose of it at the best advantage possible; am I not right about that?

Mr. SILVER. Yes.

Mr. FIELDS. I imagine that if we concede that there is an element of subsidy in this proposition that the actual commercial value of the property sold or the difference between the actual commercial value to the purchaser and the price that it cost him would represent the subsidy. That is only an opinion of my own which I desire to express in the discussion of this subject and does not require an answer from anybody. So if we grant that this is a subsidy, then every citizen who buys war materials for use that are worth more to him than what he pays for them is getting a subsidy from the Government, and Mr. Ford is not in a class by himself, and the farmers will understand that, I judge.

Mr. SILVER. It would apply, of course, generally, but even for argument's sake I do not concede for a moment it is a subsidy, because I do not believe it is.

Mr. FIELDS. I do not, either.

Mr. SILVER. But the logic of your argument is that the same conditions would attach to any other war material sold, which I concur in.

Mr. FIELDS. I stated in my premise that we conceded it for argument's sake.

Mr. SILVER. Yes; I understand that.

Mr. FIELDS. Then, I observe from information obtainable, that the Government received $3,500,000 for the Old Hickory Munitions Plant, which cost the Government $80,000,000, which was 4.28 per cent of the original cost.

Mr. SILVER. Yes.

Mr. FIELDS. Granting that this is a subsidy, the Government therefore extended a subsidy to that concern.

Mr. SILVER. Yes.

Mr. FIELDS. I observe also from the information that is available that the Government received for the wooden ships that cost the Government $800,000, the sum of $5,000 or .63 of 1 per cent. Now, the purchaser of those ships did not buy them to keep as relics, but bought them to operate.

Mr. SILVER. Certainly.

Mr. FIELDS. And in competition with ships built at normal cost.

Mr. SILVER. Yes.

Mr. FIELDS. I also observe that the 19 wooden ships that cost $600,000 each sold for $2,500, which was .42 of 1 per cent. The nitrate plant at Nitro, W. Va., which cost $60,000,000 was contracted at about 9 per cent plus. That contractor fell down because the proposition was too big for him, just like Muscle Shoals is too big for most individuals or firms, and is now selling it out for the Government on a 50 per cent commission, which will probably bring a net return to the Government of around 5 per cent.

Mr. SILVER. Yes.

Mr. FIELDS. Mr. Ford offers $5,000,000 for the property at Muscle Shoals, which cost the Government $85,423,078.73, which is 5.85 per cent of its cost, or which is 1.43 per cent more than the Old Hickory Plant brought and more than any other property has brought up to this time on which I have been able to secure the figures. Therefore, granting that it is a subsidy, Ford is not attempting to put over an iniquitous scheme upon the Government, apparently, but is buying its property at a greater percentage of its original cost than anybody else thus far has paid for such property, and the farmers all understand that.

Mr. SILVER. He is doing that, and at the same time developing a natural resource in the most desirable and helpful way.

Mr. FIELDS. Yes.

Mr. SILVER. In addition to buying it and paying as much as has been paid for other plants, he uses it to a better purpose.

Mr. FIELDS. Yes. Now, so much for that part of the subsidy. The War Department and the Congress seem to be practically of one mind about the fact that nitrate plant No. 2 should be kept for the use of the Government for the production of nitrogen in time of war.

Mr. SILVER. Yes.

Mr. FIELDS. And so far as I know, there is no opposition to that among the farmers of the country.

Mr. SILVER. No; none at all.

Mr. FIELDS. It seems to be the unanimous opinion of the citizenship of the country, regardless of class, that the Government should follow that course.

Mr. SILVER. Yes.

Mr. FIELDS. The complant is made that Mr. Ford does not propose to pay 4 per cent upon the entire investment of the Government necessary to the operation of these dams and the nitrate plant. The Government has now invested in Dam No. 2 $17,000,000 that is not covered by Mr. Ford's proposal to pay interest.

Mr. SILVER. Yes.

Mr. FIELDS. But as a balance against the interest that that would bring, Mr. Ford proposes to maintain the plant.

Mr. SILVER. Yes.

Mr. FIELDS. Which, according to the figures that have been presented at these hearings, if I have read them correctly, standing alone, would cost around $200,000 a year to maintain. It cost, I believe, $201,647. In addition to that, Mr. Ford must bear the expense of deterioration.

Mr. SILVER. Certainly.

Mr. FIELDS. Which, according to the figures of the War Department, basing it upon 5 per cent annually, would amount to $2,350,000 a year.

Mr. SILVER. Yes.

Mr. FIELDS. Or $235,000,000 during the life of the lease. In addition to that, with the completion of these dams, the Government is saved the expense of operating the Muscle Shoals canal.

Mr. SILVER. Yes.

Mr. FIELDS. Which has cost the Government an annual charge of $53,000 since its construction. I notice the War Department does not put it at that much, due to the fact that they are taking the figures of last year when the canal was not in operation at all by reason of the uncompleted condition of Wilson Dam, which obstructs all traffic.

Mr. SILVER. Yes.

Mr. FIELDS. But the average cost has been $53,000 per annum, which for the life of the lease would be $5,300,000, or a total for those three items of $260,300,000 saved to the Government against its $17,000,000 investment in the dam up to date.

Mr. SILVER. That is quite true.

Mr. FIELDS. I think the farmers of the country would accept that as a very good deal for the Government, yould you not think so?

Mr. SILVER. Certainly, in private life, one would think so, if they had that kind of a trade on; but in addition to that, he does applicational research and keeps the equipment abreast of the times by replacements.

Mr. FIELDS. I referred to the replacement cost in the $235,000 a year.

Mr. SILVER. But the replacement simply to maintain it at its status quo would not be keeping abreast of the times. He will need sometimes to junk perfectly good equipment so that new processes may be applied.

Mr. FIELDS. Yes; I had not taken into account such new processes.

Mr. SILVER. So it is even more than what you mention, and just how to measure that in dollars would be very difficult.

Mr. FIELDS. Then of the amount to be expended from this time on, Mr. Ford agrees to pay $55,000 a year, first, for the maintenance of the locks and dams, etc.?

Mr. SILVER. Yes; for the operation of them.

Mr. FIELDS. Which, during the lease, would be $5,500,000.

Mr. SILVER. Yes.

Mr. FIELDS. He will pay interest at the rate of 4 per cent which, upon the figures presented by his engineers, will amount to $161,040,000, making a total income to the Government in those two items of $166,540,000.

Mr. SILVER. Yes. There is some interest included there, and I would like, if I may, to insert from the statement of the public debt of the United States a list of the interest-bearing debts of the Government so that it may show what rate of interest the Government has paid in peace times, which would be some reasonable basis for figuring what it would pay in ordinary peace times.

Mr. FIELDS. Yes; I would be very glad to have that put in the record.

(The statement referred to is as follows:)

Bonds.	Amount issued.	Amount retired.	Amount outstanding.
4 per cent consols of 1930	$646,250,150	$46,526,100	$599,724,050
2 per cent loan of 1925	162,315,400	43,825,500	118,489,900
2 per cent Panamas of 1916–1936	54,631,980	5,677,800	48,954,180
3 per cent Panamas of 1918–1938	30,000,000	4,052,600	25,947,400
3 per cent Panamas of 1961	50,000,000		50,000,000
2 per cent conversion bonds of 1946–1947	28,894,500		28,894,500
2½ per cent postal savings bonds, first to twenty-first series	11,774,020		11,774,020

Mr. FIELDS. Then, Mr. Ford proposes an amortization fund which, retired at 4 per cent, would amount to $49,000,000 at the expiration of the list.

Mr. SILVER. Yes.

Mr. FIELDS. Which, all combined, would represent in cash actually paid to the Government or expended by Mr. Ford in the maintenance of this plant and by saving the Government the expense of operating the canal, a grand total of $475,840,000.

Mr. SILVER. They seem to be correct figures, but some of it, however, is interest on investment.

Mr. FIELDS. I referred to that. The $166,540,000 is interest, the $49,000,000 is the amortization fund, and the balance of it is the $260,300,000 in the saving on maintenance, etc.

Mr. SILVER. Yes; that is correct.

Mr. FIELDS. If the Government should be able to retire this amortization fund at 5 per cent, that would amount, at the expiration of the lease, to $100,868,642, which would be an additional gain to the Government of $51,797,707.

Mr. SILVER. Yes.

Mr. FIELDS. How would 5 per cent compare with the market for farm loan bonds at this time?

Mr. SILVER. Farm loan bonds at this time carry that rate of interest.

Mr. FIELDS. And I have heard that some people have made application for them and were not able to get them.

Mr. SILVER. People have not only applied for the bonds and could not get them, but at the time of the sale of the $40,000,000 bond issue, there was more than $40,000,000 asked for by one of the 12 banks of the system. So that not only is there a demand for the bonds but there is also a demand for the loan. So that in either instance the money could be well loaned and at that rate.

Mr. FIELDS. So, while I said in the beginning that for argument's sake we would concede that there was a subsidy, coming back now to my opinion, it seems to me that instead of the Government extending a subsidy in this case, it is making a trade with Mr. Ford which is the most favorable trade the Government has ever made with an individual in the United States.

Mr. SILVER. I believe so.

Mr. FIELDS. For the reason that this plant is not to be converted by the purchaser solely to his own use without giving any consideration to the interests of the Government, but plant No. 2 is to be maintained at this enormous expense by Mr. Ford for the benefit of the Government in time of stress, should the Government need it.

Mr. SILVER. Yes; it is.

Mr. FIELDS. I believe that is all, Mr. Chairman, and I will admit that these questions are not very pertinent to the Washington representative of the farm bureau, but were more for the purpose of getting a statement in the record to meet such suggestions that have been made here from time to time.

The CHAIRMAN. The chairman of the committee has repeatedly asked that we confine ourselves to the questions involved in Mr. Ford's proposition, but the members of the committee have seen fit to go outside of that and ask about everything else, and I am not stopping anybody.

Mr. FIELDS. Yes; and because that has happened and some statements have gotten into the record that need to be answered, I have answered them with these figures.

The CHAIRMAN. Well, go as far as you like.

Mr. FIELDS. Thank you, Mr. Chairman, I am through.

Mr. QUIN. Mr. Silver, the 21 men on this committee know who you are and for whom you are speaking, but there are 421 gentlemen on the floor of the House who are our colleagues. Now, you are president of the Federation of Farm Bureaus, is that the title?

Mr. SILVER. Not guilty.

Mr. QUIN. What is the position you hold?

Mr. SILVER. J. R. Howard, of Iowa, is the president. I am the Washington representative.

Mr. QUIN. You are what they call the legislative representative?

Mr. SILVER. Well, my title is the Washington representative. I am a member of the executive committee and a director from the State of West Virginia.

Mr. QUIN. How many organizations directly belong to the Farm Bureau Federation or whatever you call your organization?

Mr. SILVER. I would answer that question by saying that we have more than 1,500 and upward of 2,000 county organizations which are federated into 46 State federations, and those 46 State federations are federated into the American Farm Bureau Federation, or the national association.

Mr. QUIN. Does the Farmers' Union belong in that group?

Mr. SILVER. No; that is another organization.

Mr. QUIN. I used to belong to the Farmers' Alliance, but that is now out of existence.

Mr. SILVER. Yes, sir; that is the one we were discussing the other day.

Mr. QUIN. We busted the jute trust. They tried to rob us on our cotton bagging.

Mr. SILVER. Right.

Mr. QUIN. Now, in the United States there are between six and seven million farmers, are there not?

Mr. SILVER. Yes; according to the census.

Mr. QUIN. And the great majority of those farmers are represented through your organization, directly and indirectly?

Mr. SILVER. Yes, sir.

Mr. QUIN. Now, we have many types of farmers. You are a practical farmer yourself, are you?

Mr. SILVER. I am.

Mr. QUIN. We have the landlord with his broad acres, with a big house sitting up in the grove and cattle on a thousand hills. He is an agriculturist farmer.

Mr. SILVER. Yes; some have labeled him in that way.

Mr. QUIN. And then we have the farmer who produces cotton or grain, and so on, on a large scale.

Mr. SILVER. Yes.

Mr. QUIN. Now, about 90 per cent of this great number of farmers who with their own hands and with the efforts of their good wives and children cultivate from 15 to 50 acres, is not that true?

Mr. SILVER. Yes; but I would put the acreage a little larger than that. The Government saw fit, when it split up the western domain, to make the unit about 160 acres, and I would say from 20 or 25 acres to 160 acres.

Mr. QUIN. The great majority of them have about that amount?
Mr. SILVER. Yes.
Mr. QUIN. That is the man who has a few beehives sitting out there in the yard and hen nests in the back yard?
Mr. SILVER. Right.
Mr. QUIN. And he works all day, from daybreak until dark.
Mr. SILVER. Yes.
Mr. QUIN. And we have even gone out after supper and picked cotton in the moonlight. Some of them do that?
Mr. SILVER. Yes.
Mr. QUIN. They work all day, and some of them, in certain seasons of the year, build a torch in the fields so they can see to work among their vegetables.
Mr. SILVER. True.
Mr. QUIN. Then the farmer is not any 6-hour or 8-hour-day man, is he?
Mr. SILVER. No. The joke is that he is an 8-hour-day man, eight hours before dinner and eight hours after dinner.
Mr. QUIN. And works about 13 months in the year.
Mr. SILVER. That is right.
Mr. QUIN. Now, that class of men and their families, who really produce about 90 per cent of the farm produce in certain periodicals, are called at times "one gallus" farmers.
Mr. SILVER. They have been labeled that way by some.
Mr. QUIN. Now, you represent the big man with his broad acres and the "one gallus" man, as he is termed.
Mr. SILVER. Yes.
Mr. QUIN. All of them come in and have a privity of interest in this subject here.
Mr. SILVER. That is true.
Mr. QUIN. In this proposition submitted by Mr. Ford have you heard of a single dissenting voice, not only from any organization but from any individual farmer?
Mr. SILVER. I have not heard of any farmer dissenting. They are all in favor of it.
Mr. QUIN. Is it not a fact that they all stand up and with one accord proclaim that they think this is a good thing?
Mr. SILVER. They do.
Mr. QUIN. How do you account for the fact that there is such a unanimity of sentiment among that class of our citizenship, which I think constitutes the backbone of the country. Is it because it is a bad thing, as some suggest?
Mr. SILVER. They believe it to be a good thing, and believe it is freeing them from bad practices that other groups have wished on them in the past, and they want to get away from unhappy conditions which have existed, and this is a method by which they think they can do that, and they think it is a helpful thing.
Mr. QUIN. And here is one man who has come forward with a proposition to take this waste project that Congress refused to finish by its vote on the 7th of February, 1921; this man comes forward with a proposition for the completion of the work by the Government, to capitalize it, and make this fertilizer as the farming class believe at a cheaper and more economical price than it is distributed to them at present.
Mr. SILVER. That is true.
Mr. QUIN. Are you acquainted with the farm demonstration agents and cooperative purchasing and selling in the different agricultural sections?
Mr. SILVER. Yes.
Mr. QUIN. This fertilizer, if produced, just like this contract says—and so far as I am concerned, I do not care whether they change a word in it or not—but that fertilizer, if put up in a concentrated form, will have only one-fifth of the weight of the commercial fertilizer that we buy in sacks now; is not that true?
Mr. SILVER. There will be a great saving in the freight and in the bulk.
Mr. QUIN. Is it not a fact that the commercial fertilizer factory gets the concentrated product just like Ford could produce it down there, and they go out and buy sand or earth, a very heavy product, haul it in, and pay for all that expense, to mix it properly with their sulphate of ammonia or other nitrogenous products or with potash products, or the other product that is in fertilizer that we call phosphoric acid?

Mr. SILVER. Not necessarily sand. They have a filler which carries this plant food. It comes in different forms. I am not a fertilizer manufacturer, but they have a carrier which carries these elements of plant food.
Mr. QUIN. In my country it is mostly sand.
Mr. SILVER. That may be.
Mr. QUIN. Then, if it be ground rock or sand, the phosphoric acid—the potash and the nitrogen—is absorbed on the outer surface of that sand in the mixing, is it not?
Mr. SILVER. You had better talk to somebody who is better informed technically than I am as to the mixing processes, Mr. Quin.
The CHAIRMAN. Mr. Quin, if you will allow me, I think that has been testified to at least a half dozen times in the hearings.
Mr. SILVER. And my assistant, Mr. Bower, will go into the technical side of it when I am through, and he can answer that question better than I can.
Mr. QUIN. This product could be distributed under the agency that is provided for here—through these cooperative purchasing agents, under the direction of the farm demonstrator of the county, which the county pays for?
Mr. SILVER. Yes.
Mr. QUIN. Then, there is already the machinery set up for the acquisition of this product of Muscle Shoals and its distribution directly to the farmer?
Mr. SILVER. Yes.
Mr. QUIN. And a few farmers, two townships of them, can get a carload or two carloads, or whatever they please?
Mr. SILVER. Yes.
Mr. QUIN. Then, the question of whether or not Mr. Ford would put this in with the sand or ground rock and have 2,000 pounds to be shipped, wherein four or five or certainly not over six hundred pounds would carry all the fertilizer, would be an expensive method, would it not?
Mr. SILVER. The least weight we can have to carry, the commercial plant food, of course, the greater saving in freight and handling and in every other way, and one of the economies contemplated is to save in weight under this process; that is, to get the same amount of plant food with less weight to carry and handle.
Mr. QUIN. Certainly. This number of farmers that we have in the United States, according to the statistics we have, owe on their farms about $8,000,000,000. That is the amount of the mortgages on such real estate.
Mr. SILVER. Yes; around $7,000,000,000, I believe; the estimate is under the last census.
Mr. QUIN. That industry, although they work hard, has not been a profitable one, then, has it, for the last few years?
Mr. SILVER. No; it has not.
Mr. QUIN. And if there is a prospect of that basic industry of the United States receiving at the hands of Congress legislation that fundamentally will enable them to produce more per acre at a less cost, is it not advisable?
Mr. SILVER. It is advisable not only for the farmer's sake but for the consuming public.
Mr. QUIN. And it is not class legislation, because all the public is directly interested.
Mr. SILVER. Aboslutely not; nor are any other of the measures we have asked for, or those you have kindly granted to us, been class legislation in any sense.
Mr. QUIN. Certainly not, in my judgment; although it is said by some to be that. This contract that Mr. Ford has offered to the Government meets with the approval of the people you represent?
Mr. SILVER. It does.
Mr. QUIN. Some gentlemen asked you about the guaranties. You consider the investment Mr. Ford is making there of his own capital, and knowing his disposition, you consider that guaranty sufficient to insure this fertilizer being produced.
Mr. SILVER. We think the terms of that contract are sufficient; yes.
Mr. QUIN. One gentleman doubted the statement that the farmers pay four-sevenths of the freight in the United States. Let us trace that for the record. All of the agricultural products must go to a market, must they not?
Mr. SILVER. They certainly must, except those that are consumed on the farm.
Mr. QUIN. And most of it must travel on railroads or on steamboats, must it not?
Mr. SILVER. Certainly it must.

Mr. QUIN. It goes to the consumer, and the farmer can not fix the price of his product, can he?

Mr. SILVER. No.

Mr. QUIN. His potatoes and his wheat and his corn and his cotton and his tobacco must accept what the world's demand allows him; is not that true?

Mr. SILVER. That is very true.

Mr. QUIN. Then, when it gets to its destination, the warehouse charges, the freight, the insurance, and the handling are all charged against the product that the farmer has put up?

Mr. SILVER. True.

Mr. QUIN. Then he pays the freight on that stuff to the consumer. He pays it to the factory that puts up the raw material, because that adds to the price of it.

Mr. SILVER. He certainly pays it to the controlling market. To illustrate with wheat, Liverpool makes the price of wheat. We certainly pay on that wheat delivered to Liverpool, whether it goes to Liverpool or not.

Mr. QUIN. The man who gets his cotton out of his field, gets it to the gin, has to pay for ginning it; he has to pay the cotton broker's fee for selling it; he has to pay the warehouse charges; he has to pay the freight, and two-thirds of it goes across the high seas.

Mr. SILVER. Yes.

Mr. QUIN. He pays the freight on it and all the expenses until it is turned over to the spinner in the foreign country, is not that true?

Mr. SILVER. Yes.

Mr. QUIN. Now, then, the man who produces that cotton must have fertilizer. They are growling here about Mr. Ford paying the Government 4 per cent. The man who must have fertilizer will have to pay that 4 per cent, will he not?

Mr. SILVER. Certainly.

Mr. QUIN. And if it was 10 per cent, the farmer would have to pay that excess 6 per cent, would he not?

Mr. SILVER. Yes.

Mr. QUIN. Now, he pays the freight on all of the equipment that he must have on his farm, does he not?

Mr. SILVER. Certainly; he does.

Mr. QUIN. The factory makes that stuff and it goes to the farmer and he is bound to pay the price plus the freight.

Mr. SILVER. Yes; the factory price plus the freight.

Mr. QUIN. Then there is not anything astonishing about the statement that the farmers are paying four-sevenths of the freight paid in the country.

Mr. SILVER. The hearings of the Interstate Commerce Commission give that in very much detail and follow it through in a very complete way.

Mr. QUIN. I never knew before that that was true, but I can see how that would be so with the great number of people involved, and if those farmers were to go on a strike for 6 months all of us city fellows would starve to death; would we not?

The CHAIRMAN. What city do you come from?

Mr. QUIN. I am living here in Washington.

The CHAIRMAN. You say "us city fellows," and I was just wondering what city you came from.

Mr. QUIN. McComb city, and we do not farm in that city. We live off of the farmers and all towns have to live off of them. We know that.

Mr. SILVER. During the war period, when a meeting was called of the housewives league in the city of New York, Mr. Scrivens, the president of the New York State Federation, was on the platform and was talking about what was involved in food production. He was interrupted by a lady on the platform who said, "We know you farmers are profiteering, and if you do not quit your profiteering, we are going to get our food some place else." Just what she had in mind, I do not know, but unless you do like that lady said, you would rely on the farmers of the United States, which is the Egypt at this time of the world.

Mr. QUIN. I have no doubt that some of them believe the farmers profiteer, but as a sample of that my ancestors have been farming for two or three hundred years, and before the war they were big plantation holders, but by the time it got to me I was a "one gallus" farmer. The farmer, working the number of hours you have stated, a great many of them, have to wear patched and shabby clothes, do they not?

Mr. SILVER. Indeed, they do.

Mr. QUIN. And it is not from choice, is it?

Mr. SILVER. It certainly is not, and the patched and shabby clothing is only a little part of it. They would like to send their children to better schools and they would like to have better homes and would like to have better equipment in their homes. There are just lots of them they would like to have, and they labor long and hard so that they might have just the simplest of comforts and foodstuffs.

Mr. QUIN. And there are thousands of farmers all over the United States who are not able to have shoes for their children in the wintertime.

Mr. SILVER. A great many of them do not have them, particularly at this time.

Mr. QUIN. Mr. Silver, they seem to doubt Mr. Ford's feelings for the people. He manufactured these automobiles you were talking about and started in with nothing. Did he have to have anybody else to lower the price for him or did he do that voluntarily?

Mr. SILVER. He did it voluntarily.

Mr. QUIN. As soon as the war was over, did he not announce a great deal lower price for his automobiles, and tractors, and trucks?

Mr. SILVER. That was the first place where prices were reduced.

Mr. QUIN. And he reduces the prices on farm tractors, and trucks, and cars periodically and sometimes before they wake up in the morning the agencies have notice of some reduction. They did that last fall, did they not?

Mr. SILVER. Yes.

Mr. QUIN. He has on the market to-day the cheapest tractor a man can run, and that one little gasoline engine can run as many plows as 9 Negroes and 18 mules day after day.

Mr. SILVER. I do not know about that application of it but he has a good tractor that does do the work, and it is by odds the cheapest one in dollars on the market.

Mr. QUIN. And nobody through competition forced him to do that, did they?

Mr. SILVER. No. Because it was the cheapest tractor before he made this last reduction, which was a very material one.

Mr. QUIN. Then with that necessity for the farm, on his own volition, being put down in price, have you any reason to believe that he would pursue a different policy with reference to fertilizer at this activity at Muscle Shoals?

Mr. SILVER. None on earth. We believe he would pursue that course.

Mr. QUIN. Certainly; that is all.

The CHAIRMAN. I see that McComb City has 2,386 inhabitants. I congratulate you on being a big city man.

Mr. QUIN. That is an old census. We have grown now to 10,000.

The CHAIRMAN. This is the United States Official Postal Guide of July, 1921.

Mr. QUIN. That is wrong. The population is 10,000.

Mr. WRIGHT. Mr. Silver, you have been carried over a good, long, broad field yesterday and to-day, and I believe you touched on agriculture and finance and law and chemistry, and divers other subjects, including political and economic questions. You have been asked repeatedly here about sections 14 and 15 of this Ford offer, and especially in reference to article 15, which provides that "in order that the farmers may be supplied with fertilizers at fair prices and without excessive profits, the company agrees that the maximum net profit which it shall make in the manufacture and sale of fertilizer products at nitrate plant No. 2 shall not exceed 8 per cent of the actual cost of production thereof." etc. The special feature I want to invite your attention to is the appointment of this board to supervise this fertilizer industry. Do you not understand that the members of this board would be in the nature of trustees for the farmers?

Mr. SILVER. Yes; they would be the board that would carry out that part of the agreement and would be in the nature of trustees.

Mr. WRIGHT. Now, suppose these organizations should go literally and absolutely out of existence that are named here in article 15, do you not know that it is the universally accepted legal proposition that a trust never fails for the want of a trustee?

Mr. SILVER. Yes. I am not a lawyer, but——

Mr. WRIGHT. But you recognize that principle of law?

Mr. SILVER. Yes.

Mr. WRIGHT. As a sound legal proposition?

Mr. SILVER. Yes.

Mr. WRIGHT. Then would not a court of chancery, in the event all these organizations should go out of existence and have no successors, appoint representatives

from some organization nearest like the ones which did go out of existence; would not that be the rule in a chancery court?

Mr. SILVER. That might be the procedure.

Mr. WRIGHT. That is a well-recognized principle of law, if you are not familiar with it.

Mr. SILVER. Yes; I believe that is a well-recognized principle of law.

Mr. WRIGHT. It proceeds on the idea that the court will lay hands on it and appoint trustees to act in the place of those who may have gone out of existence, so that the trust will not fail.

Mr. SILVER. Yes; but as it occurs to my mind, I attach but little importance to the suggestion that there will be no farm organizations, even though the existing ones might pass away.

Mr. WRIGHT. I agree with you about that.

Mr. SILVER. The grange is 50 years old, and better to-day than it ever was. Fifty years or 100 years is not a long period for a farm organization, and just so long as we have agriculture, with the national life we have and with all the other groups organized of necessity and for self-protection, the farmers will have to be organized. So I think there is a very remote possibility of that happening.

Mr. WRIGHT. In other words, if the activities mentioned in section 15 really function, you do not anticipate there will not be some one to take the places of the organizations here named.

Mr. SILVER. There will be somebody to take their places.

Mr. WRIGHT. That would inevitably follow, would it not?

Mr. SILVER. Certainly; there is no doubt about it.

Mr. WRIGHT. And you say you do not think there is any chance of our not having farm organizations as long as we continue to farm.

Mr. SILVER. I just firmly believe that.

Mr. WRIGHT. But the interests you represent would have no objection to clarifying that language or making it stronger if words could do that?

Mr. SILVER. I do not know that we have any objection. We are satisfied with that language and we are not asking anything in addition.

Mr. WRIGHT. But any other words that will better effectuate the intention you all have in mind, you would not object to?

Mr. SILVER. I think not.

Mr. WRIGHT. In other words, if some more permanent organization could be suggested, making it nearer in perpetuity, there would be no objection to that?

Mr. SILVER. Of course, I would hate to pass on it without knowing what the form of the suggestion was, but as a general proposition, I would say not.

Mr. CROWTHER. I would like to ask just one question. You said you were a farmer, Mr. Silver?

Mr. SILVER. I am.

Mr. CROWTHER. Are you an active farmer now?

Mr. SILVER. I am.

Mr. CROWTHER. Are you all the time in Washington?

Mr. SILVER. I am here the greater part of the time.

Mr. CROWTHER. Somebody else runs your farm, then?

Mr. SILVER. Yes.

Mr. CROWTHER. Are you a salaried representative?

Mr. SILVER. I am.

Mr. CROWTHER. Would it be an impertinent question to ask what your salary is?

Mr. SILVER. No, sir; I have no objection on earth to stating that. I am paid $10,000 a year.

Mr. CROWTHER. Of course, I know it is easy to get mixed up on questions where you are interrogated so often, but you just stated to Mr. Quin in answer to his interrogatories that you considered that contract all that was necessary and perfectly satisfactory.

Mr. SILVER. With the reservations, of course, which I have spoken of several times to the committee.

Mr. CROWTHER. Oh, yes; but in answer to him you stated it was perfectly satisfactory, and a just recall the fact that you had on several occasions stated there was new language that your organization was considering that you thought was necessary and which might be added to the contract, to the advantage of everybody?

Mr. SILVER. I was always keeping that in mind.

Mr. GARRETT. As I understand it, the farming interests which you represent believe you have language there which will amply protect the farming interests in the years to come?

Mr. SILVER. Yes.

Mr. GARRETT. That is what your people believe about it?

Mr. SILVER. Yes.

Mr. GARRETT. But if the analytical minds of this committee should think that perhaps you needed stronger language to protect your interests, you have no objection to that language being used and you would welcome any suggestions looking to that end?

Mr. SILVER. I have always approached the committees of Congress in that way. I have given them our thoughts and beliefs and have been mostly happy with their actions.

Mr. MORIN. Mr. Silver, if the Government should receive a proposal from any other concern which in the judgment of this committee or the Members of the Congress would be more advantageous to the Government than Mr. Ford's proposition, would your organization advise that they accept it?

Mr. SILVER. Would you state that again? I do not know that I quite caught it.

Mr. MORIN. If the Government should receive a proposal which, in the judgment of this committee or the Members of the Congress, would be more advantageous to the Government than Mr. Ford's proposition, would your organization recommend that they accept it?

Mr. SILVER. I would scarcely be in position to pass on that without our executive committee and our people passing on it. I would not want to take a position contrary to that which they have taken. There is no proposal before us, except what we have spoken about, and, if some other condition arose, I would want to meet it at that time. It would hardly be right to ask me to speak to an imaginary situation that might arise.

Mr. MORIN. What would be your personal opinion? Do you not believe we should accept the very best proposition we receive from any source?

Mr. SILVER. We want the best that can be had out of this situation, and, as it stands now and has stood for months, we believe Mr. Ford's proposition is the best one.

The CHAIRMAN. If there are no further questions, we are very much obliged to you, Mr. Silver.

Mr. SILVER. I thank you very much. Mr. Bower is here and will go into some phases of the fertilizer end and the technical end of this matter, which, personally, I am not qualified to do.

STATEMENT OF MR. R. F. BOWER.

The CHAIRMAN. Mr. Bower, will you please state your name and also the business you are in?

Mr. BOWER. R. F. Bower. I am Mr. Silver's assistant in the Washington office of the American Farm Bureau Federation.

The CHAIRMAN. Will you proceed in your own way, please, to state just exactly what you want the committee to know regarding the attitude of your organization regarding Henry Ford's offer?

Mr. BOWER. Thank you, Mr. Chairman. I will try to address myself to clearing up the matter along the lines of the letter which Mr. Silver submitted to the committee in the early part of the hearing, inasmuch as we thought there might be doubt created in the minds of the committee as to the reasons why we advocate Mr. Ford's proposal, and I will try to present this matter as it appears to us who have studied this nitrogen-fixation question for some time.

I think it might be of interest to the committee if I would present to you at this time a resolution adopted by the national and State officials of the Farmers' Educational and Cooperative Union of America and of the National Grange, adopted unanimously on February 8, 1916. This resolution appears in the records of the hearings of this committee in considering the national defense act of 1916. I would like to read just two paragraphs of it.

"It is hereby resolved," etc.

"(1) That we hereby, as strongly as possible, appeal to the President and Congress of the United States that during the present term of the Sixty-fourth Congress, such legislation shall be enacted as will authorize the construction of a dam or dams for the development of the necessary power for the fixation of the nitrogen of the atmosphere as a fertilizer, and in such quantities to supply the needs of the Government and as far as possible supply the demands

of agriculture and by this development free, in part, the farmers of this country from the Chile saltpeter monopoly.

"(3) We insist that the location of this air nitrate industry be determined with reference to the agricultural interests of this country and that a site be selected that has near it a source of limestone, coke, and phosphate rock, as has been recommended by the Department of Agriculture, and that furthermore, if possible, it be selected closest to the greatest consumption of fertilizer in this country."

Mr. Chairman, the Government has embarked upon this program which we sought in 1916. It has partially developed a water power for this purpose. It has built the fixation plant for its own purpose, brought out by the war. It is located close to sources of limestone. coke, and phosphate rock, and it is located closest to the greatest consumption of fertilizer in this country.

We ask that this be completed and finished for the purpose, as outlined in section 124 of the national defense act; and in that act, as you gentlemen of the committee know, who were present when that was considered, fertilizer was one of the strong considerations you had in mind, although, of course, we realize that your nitrogen for national defense was primarily in all your thoughts in connection therewith. Section 124 mentions fertilizer as one of the reasons for the passage of that section. I am sure the committee will agree that the intention was that fertilizers were to be produced in times of peace if it could be so done economically and properly.

Now, this plant has a potential value for agriculture, and the only way you can prevent that value from becoming available is to allow it to remain idle, and you can not take the potential value away from it even then, because if operated. it does have a value. Fortunately, both your purposes and ours are best served by the operation of that plant. While it has been denied—and I will refer to that later—that the operation of the plant is the best way to keep it, we can not agree to that for a moment, and an operating plant kept abreast by research and development by Mr. Ford. as he proposes to do at his own expense, is certainly a more efficient protection to the Government than an idle plant, depreciating, and requiring to have repairs made. Fortunately, the operation of this plant is the identical thing that serves the purpose we seek.

Daniel Webster has said. "Farmers are the foundation of civilization and prosperity. The farmer must always be the foundation, but that does not mean that he must be kept beneath the surface." We ask you, in consideration of your decision on this proposition, that we be not kept beneath the surface. In making this decision between the propositions you have before you, you have that choice to make, and the proposition made by Mr. Ford does not propose to keep the farmer beneath the surface. The proposition, as I have read it, in the official copy transmitted by the Secretary of War, of the Alabama Power Co., makes no provision for the farmer.

This whole question is a question of soil fertility. Our national permanence depends upon soil fertility. Mr. Silver stated that but for the maintenance of our soil fertility this land would become a desert, and I think we only have to look back into history to see that among the great nations of the past, they passed away on account of the destruction of their soil fertility. Assyria and Babylon and the great nations of biblical times, supporting millions of people, raising great armies in Persia that came across into parts of Europe, are to-day desert wastes where crops will not grow, and they were destroyed, fundamentally, because of the destruction of their soil fertility. So we are addressing ourselves to a problem that is of interest to everyone, not necessarily only from our viewpoint, but from the viewpoint of the future of our Nation, which depends upon the maintenance and continuance of our soil fertility.

It is the duty and the business of a farmer to raise as large crops from his soil as it is possible for him to do; that is his business. But he has a sacred obligation to all society and to his nation to maintain the fertility of his soil so that future generations can be fed. If he neglects that we will not continue as the prosperous, independent Nation we are to-day.

This requirement is absolutely fundamental, and it has been well stated by Theodore Roosevelt in the Outlook of October 12, 1912, at page 295, where he said:

"I have always been deeply impressed with Liebig's statement that it was the decrease of soil fertility, and not either peace or war, which was fundamental in bringing about the decadence of nations. While unquestionably nations

have been destroyed by other causes, I have become convinced that it was the destruction of the soil itself which was perhaps the most fatal of all causes."

How can we maintain soil fertility? There has been a great deal of talk about soil fertility and a great deal of talk about fertilizers, but it is a simple proposition. Soil fertility can only be maintained by replacing into the soil those elements that the crop takes out in its growth. That is the only way you can do it.

And the best way to do that is through the use of high-grade commercial fertilizers at low prices. The use of commercial fertilizers at a reasonable cost serves a double purpose. Not only does that maintain the fertility of the soil but it provides the farmer with the most efficient labor-saving devices he can use; that is, the labor of one man on a field with efficient fertilizer application will raise the amount of crops that two men could raise without that fertilizer, and the whole question is one of getting the fertilizer at a proper price. The use of cheap fertilizer compounds consequently will enable the farmer to compete for the high wages paid by the industries in the cities, and there is no other way for him to reach that attainment so much desired.

Another point with reference to this soil fertility is this: It has been suggested that we have gone ahead and continued to feed the Nation with what you have, and that we are raising a bugaboo. But in the past increased food production demanded by the Nation has been met by a westward progression of agriculture on to the great virgin plains of the Mississippi Basin. We have finished that exodus of eastern agricultural population to the West, and to-day there is practically no great area of fertile virgin land still to be brought under cultivation. Of course, there are irrigation projects and drainage projects, but there is no great acreage section of the country where the farmers can go without great expense to the Government to bring that land under cultivation and produce the additional crops that our increasing population will demand.

The determining factor of fertilizer seems to have been lost sight of largely in this respect, and that is that it is a matter of price. It is the cost of fertilizer that is the deciding factor all down the line. It is the price of the material that makes the chemical into a fertilizer. You may take the nitrogen compounds or the phosphorous compounds that a druggist will retail to you over the counter and put them on the soil. They will increase the crop production, but they are not fertilizers. But when they reach a point in price that a farmer can buy them and apply them to the soil and increase crop production so that the increase will more than pay for the application of this fertilizer to the soil, you have a fertilizer. And the price of the fertilizer is what limits its consumption in this country. With all the figures presented to you, showing that there is a 7½ per cent increase in fertilizer consumption, as Mr. MacDowell said, this thought has been entirely overlooked. I would not venture to tell the committee what the consumption of fertilizers would be if the price was reduced one-third. The cost price of fertilizer right now allows its application only to the high value crops. That is why you have the great use of fertilizers in the South and eastern parts of the Nation; and more than the fact that the soil has become exhausted is the fact that the high-value crops which the eastern farmer raises will allow the application of fertilizer, where the low-value crops, from which the main food supply comes, such as wheat and corn, do not allow the application of fertilizer at present prices.

Fertilizer must pay its cost, plus a profit to the farmer; if it does not do that it is of no value to him. Fertilizer is just three elements combined in the various combinations in which it is shipped to the farmer—nitrogen, phosphorus, and potassium. You hear nitrogen mentioned as ammonia, ammonium sulphate, ammonium nitrate, sodium nitrate from Chile, cottonseed meal; those are all carriers of nitrogen fertilizer. Phosphorous fertilizer is carried almost solely by what they call acid phosphate. It is the phosphate rock treated with sulphuric acid that carries our phosphorus. Unfortunately, our potash has to come principally from Germany, because of the price. Nitrogen is the limiting factor in crop production in most of our worn-out soils.

I might use an illustration of a barrel in which the staves are broken: one stave is broken about one-third way up toward the top of the barrel, another stave is broken about half way up the barrel, and another stave is broken two-thirds of the way up the barrel. The crop is demanding three elements—nitrogen, phosphorus, and potassium. The nitrogen in most of our soil is the stave broken off just one-third the way up the barrel, and when the crop has reached the point where it needs more nitrogen, which is not there, it will not go up, no matter how high the staves are that carry the phosphorus and potash, but

it runs out at that point. But if we have a sufficient amount of nitrogen the crop will go up until it reaches the phosphorous leak, and then the crop production stops at that point. But if we have enough of those two elements but do not have a sufficient amount of potash, the crop will go up to the third broken stave. If we have a sufficient amount of all of those elements it will run over the top.

Let me give you an illustration to show why nitrogen is the limiting factor. A 100-bushel crop of corn in the grain and stalk takes from the soil 148 pounds of nitrogen, 23 pounds of phosphorus, and 71 pounds of potash. You can easily see the large proportion of nitrogen, 148 pounds to 23 pounds of phosphorus and 71 pounds of potash.

In order to show you what the demand for nitrogen is—and you have had it stated here that our demand will not use the output of the sulphate ovens—in 1909, corn, wheat, and oats in grain alone removed from the soil of the United States 3,965,000,000 pounds of nitrogen, 606,000,000 pounds of phosphorus, and 875,000,000 pounds of potash. That was in just three crops in the grain alone. Of course, some of the stalk did not come back on the land, and I am assuming that the farmer kept his straw and grain fodder and spread that over the fields. But the grain is shipped, and that amount was taken out of the soil by just those three crops. To replace this nitrogen into the soil would require 9,912,500 tons of ammonium sulphate a year. And yet we are told that 500,000 tons a year is all the farmers can use. It is all they can use at the price they have to pay, and if we are going to replace this nitrogen into our soils we have to get cheaper nitrogen.

I think the committee would be interested in the testimony given before the Committee on Agriculture by Mr. Washburn on February 9, 1916, on page 4 of the printed hearings, where he said:

"I believe, therefore, that the best way in which I can contribute something of possible value to your deliberations is to confine myself in the main to what is possibly the most important single difficulty the farmers of this country face in the matter of fertilizing their crops, and the most effective single remedy therefor. I refer to the always high and frequently prohibitive cost of the nitrogen fertilizer as the difficulty, and to Government cooperation in the establishment of the nitrogen industry within the borders of the United States as the remedy." That statement was made by Mr. Frank S. Washburn, the president of the American Cyanamid Co.

The CHAIRMAN. At that time was he president of the Alabama Power Co.?

Mr. BOWER. I think at that time he either was or had recently been vice president of the Alabama Power Co. On page 6 there is a statement which I think I will read to you from the testimony of Mr. Washburn at this same hearing, because at that time he clearly sets forth the problem now before Congress. He said:

"It is probably true that a limited amount of nitrogen applied to the soil is profitable substantially regardless of its cost. The effect of additional nitrogen upon increased crop production is known and measureable as a result of continuous experimentation covering a period in England, for instance, of 60 years. These experiments have been directed and supervised by the greatest scientists in every civilized country, and in consequence we know that nominally a pound of nitrogen will increase the wheat crop by one-third of a bushel of grain and 40 pounds of straw, the corn crop by five-eighths of a bushel, the potato crop by 1⅔ bushels, the tobacco crop by 10 pounds, the cotton crop by 5 pounds, and so, indefinitely. The American farmer pays, on the average, 28 to 30 cents per pound of nitrogen constituent, and, therefore, when we take wheat at 86 cents per bushel and no sale for the straw, he practically breaks even on his investment in nitrogen. His entire profits, therefore, must lie in the sale of the extra quantity of straw.

"On corn at 57 cents per bushel he has a net profit of 25 per cent of the cost of the fertilizer; on potatoes at 60 cents per bushel a net profit of 200 per cent; on tobacco at 10½ cents per pound, a net profit of 275 per cent; and on cotton at 12 cents per pound a net profit of 115 per cent. These prices assumed are the five-year average received by the farmer, 1909 to 1913, inclusive. To obtain the true net profit one must deduct the cost of handling the fertilizer from the railway station and applying it to the soil. I want to draw special attention to the significance of the figures which have just been given in so far as they apply to the cereal crops. Here the profit in the use of fertilizers at prevailing high prices is comparatively small and uncertain. These crops cover 60 per cent of the cultivated acreage in the United States, and in these figures we have in part the explanation of why it is that the use of nitrogen is practically confined in the United States to crops other than the cereals, such as cotton, potatoes, truck, tobacco, etc."

I think that clearly demonstrates why these fertilizers are used extensively on cotton, tobacco, and potatoes. Now, in this matter the question is where are we going to get this nitrogen. I think I have demonstrated the fact that we need it, and there is only one source from which we can get it, and that is from the air. The Chilean nitrate beds are eventually going to be exhausted; in a hundred years, according to the testimony of some experts, they will be exhausted. The cheapest deposits have been exhausted. They can not lower their price suddenly unless they cut out their export duty, which we hope the operation of this plant will make them do.

In the same year, 1916—and there has been considerable development in the art since that time—the American Cyanamid Co. again, through their president, Mr. Frank S. Washburn, on page 5 of a hearing before the Senate Committee on Agriculture and Forestry, on March 16, 1916, testified as follows:

"What has been obtained, economically speaking, is this: That the factory costs under most favorable conditions, those which are not only theoretically obtainable, but actually obtainable in some parts of the world, everything, including overhead and superintendence, and all that sort of thing inside the factory, but not including the interest on the investment, for producing nitrogen comparable to the nitrogen that is in the Chilean nitrate is about one-third of the ordinary market price of the Chilean nitrate.

"Senator SMITH of South Carolina. You mean to say that the factory cost is about one-third of the selling cost?

"Mr. WASHBURN. Of the selling cost of Chilean nitrate."

Also, in a hearing before the Committee on Agriculture of the House on February 9, 1916, Mr. Washburn said:

"My anticipation is that the establishment of the nitrogen industry, as it can be established with what I believe, and what I believe would appeal to those who study the subject, is the proper and legitimate Government cooperation, will give the farmer his fertilizer for one-half of what he would otherwise pay for it."

In testifying before the Senate Committee on Agriculture and Forestry Dr. L. H. Baekeland, one of the foremost chemists in this country, an independent chemist and the inventor of Baekolite, a man well recognized in the profession, made the following statement on this subject of the fixation of atmospheric nitrogen:

"The statement is made by the present Government monopoly in Germany that after the war is over and after what they know now about the synthetic manufacture of nitrogenous fertilizer from the air, after all the experience they have acquired during this war while making nitric acid, that they will be in such condition that they intend to furnish the farmers of Germany nitrogen fertilizer at about one-half the price it is costing the consumer here in the United States. If Germany can do that, gentlemen, there is not the slightest doubt in my mind that we can do the same here, or that we can do better."

The report of the nitrogen products committee of the British Empire, in item (*d*), paragraph 654, on page 133, says:

"Combined nitrogen, as cyanamide or ammonium sulphate, can be obtained by synthetic processes at a cost, at the factory, which is less than one-half the market price of combined nitrogen from other sources, prewar conditions being taken as a basis in each case."

As an interesting matter in this connection, I have a copy of an argument prepared by the Koppers Co., of Pittsburgh, arguing for a duty on sulphate of ammonia, and on page 8 of that argument, under the heading, "Why protection by legislation is necessary," the second paragraph says:

"The cost of operating these plants is relatively low, so that even to-day sulphate of ammonia is being sold in Germany at half the price in the United States, based on the present rate of exchange."

So it is an accomplished fact in Germany.

Now, Dr. Whitney and Dr. Tolman and Mr. Swann have given some wonderful testimony to this committee as to the possibilities of the phosphorous compounds by the use of the electric furnace, all depending upon cheap water power, which we believe we can secure through the operation of this plant under the contract proposed by Mr. Ford. I will not read their testimony in regard to these high-grade materials, except to show you a few things along that line. I will come back to that a little later.

The development of the fertilizer industry will not bring about the necessary improvement in the use of high-grade fertilizer compounds through a slow improvement; that is to say, 16 per cent is the highest content phosphate material furnished to the American farmer to-day.

The CHAIRMAN. You say 16 per cent?

Mr. BOWER. Sixteen per cent acid phosphate. It is not possible to make economically 20 per cent acid phosphate; there is no way of doing it, and the next compound jumps, as testified by Dr. Whitney and Mr. Swann, to the several superphosphates, which carry above 40 per cent, and if we are going to make this step now, we have got to cross that creek. We can not make two jumps, land at 20 per cent and go on to 40 per cent. We have got to jump from 16 to 40. The present fertilizer industry, with its investment in acid-sulphate plants that are making 16 per cent, feel probably that the jump could not be made. It would injure them—I do not question that for a moment—and I think that explains the reason why they are here. But agriculture must go on; we must feed our crops; we must begin to do it intelligently and scientifically. And Mr. Washburn himself recognized that situation in his testimony before the Agricultural Committee of the House in the same hearing I referred to a moment ago, when he said, "The answer to the fertilizer problem, to be of any practical and immediate value, must lie in revolutionizing present conditions instead of slow evolution proceeding under their domination." He recognized that it must be a jump to get to these high-grade materials; and this is the crux of the whole situation and the cause of the opposition. There is no question about it. It is not that these gentlemen are coming here in a philanthropic spirit to prevent the Government making a bad deal with Mr. Ford.

Last year—if I may be permitted to inject this at this point—when the proposition was for the Government to operate this plant and try to secure the same results there was no bad bargain with a private individual interwoven in it or connected with it, and they were just as strenuous in their opposition, as most of you gentlemen know. What they fear is the result of this development. What we seek as farmers is to maintain our soil fertility and increase our crop production through the greatly increased use of fertilizer material. It is those results that these gentlemen fear. It is a clear-cut issue. You can not take a step forward in the line of progress without treading on somebody's toes, and unfortunately to make this development somebody's toes have got to be stepped on. But I am sure that the committee would not agree that the interests of an industry dependant upon a primary interest such as agriculture should be considered as superior to the interests of agriculture itself. That is not a situation that will appeal to the people of this country as a whole, and certainly it will not appeal to the farmers.

Now, with reference to the nitrogen production in this country. I want to make this flat statement, and that is, simply that there is no business in the United States of America engaged primarily in the production of nitrogen compounds. All nitrogen compounds produced within the borders of the United States are by-products of industries that depend upon the sale of a major product for their existence; and these industries who are asking that you protect their interests are asking you to protect the interests of a by-product of another major industry. Take, for instance, if you please, the by-product coke ovens. Their major product is coke, for the steel industry, and by the testimony of Mr. MacDowell the cost of the ammonia in a ton of ammonium sulphate, the 500 pounds in a ton of ammonium sulphate is $1.50. That is his statement. They argue if they do not get a dollar and a half for the 500 pounds of ammonia they will have to increase the price of coke, and consequently increase the price of steel; but the amount of ammonia they get in producing a ton of coke is not worth 15 cents on the ton. It is only worth about 6 or 7 cents. I will put the correct figures on that in the record. If I am not mistaken it is not more than that on a ton of coke. On the basis of $1.50 per 500 pounds of ammonia it is 0.021 cent per ton of coke.

The CHAIRMAN. How much is it on a ton of steel?

Mr. BOWER. I will try to obtain those figures. I do not know exactly the amount of coke that is used in the manufacture of a ton of steel, but I can get that information for you.

The CHAIRMAN. I wish you would put that in the record.

NOTE.—One ton of coke is used to 1 ton of steel. So it would be the same 0.021 cent on a ton of steel.

Mr. BOWER. I will be glad to do it. In the case of the by-product coke-oven industry they have said repeatedly, and they used that argument most effectively

last spring, that their production was 550,000 tons of ammonium sulphate per annum; but if you read the testimony carefully where they make that statement—and I notice Mr. MacDowell was careful to make it in that way—you will see that it refers to sulphate equivalent. The meaning is simply this, that 550,000 tons per annum is the amount of ammonium sulphate that they can produce if all the ammonia recovered from the by-product ovens was manufactured into ammonium sulphate and sold as such; but that is not the situation. Their primary market which is always supplied first—I do not mean in point of time, but first in point of the industry—is the great market for aqua ammonia and anhydrous ammonia and the various ammonia liquors that go into household use, and that amount has got to be deducted from the amount of ammonium sulphate produced before the farmer gets any ammonium sulphate from the by-product industries. In 1920, which is the biggest actual production year the by-product coke-ovens ever had, the total production was 467,000 tons. That is the production of sulphate equivalent; that was their total production, 467,000 tons. The actual production of ammonium sulphate, which is the fertilizer ingredient, was only 337,500 tons, and that was the largest year the by-product coke ovens ever had. So you will see that there is a difference there of 129,500 tons of sulphate equivalent going into ammonia liquor. Let me just point out another difficulty. Those figures are from the United States Geological Survey statement as to the by-products obtained from coke-oven operation in 1920.

There is another difficulty in depending upon such a by-product source for our nitrogen. During this past year, as you gentlemen know, the farmers of this country have been passing through one of the worst crises that agriculture ever experienced in the United States. Yet the by-product coke ovens are nearly shut down; the steel industry has come to a halt, and the production of ammonium sulphate is not coming forward; and exactly identical conditions will again take place whenever you have a crisis in agriculture. When agriculture goes through a stress and storm period, as has been the case recently all over the country, all industry slacks down, eventually working back to the steel industries; and when the farmer needs a larger amount of cheap fertilizer to get back on his feet the production of ammonium sulphate is reaching its lowest level in the course of its decline following after agriculture. That is one reason why the American farmer can not get cheap nitrogen to increase his soil fertility. This is a by-product, with a preferential first market for the ammonia liquors before we get any. In 1920 the exports amounted to 59,566 tons.

Last spring, when the proposition was for the Government completion and operation of this project, the by-product coke oven interests were actively engaged in defeating it, and following its defeat they prepared a document arguing against the completion of the Wilson Dam for the operation of nitrate plant No. 2. They sent out a letter to a large number of by-product coke-oven manufacturers over the country in effect stating that while the proposition had been defeated last spring it would undoubtedly come up again in the fall and they wanted to be prepared, and they got quite a few signers on the back, about 20 of them. I want to call attention to five of those especially, namely, the Indiana Coke & Gas Co., of Terre Haute, Ind.; the Minnesota By-product Coke Co., of St. Paul, Minn.; the New England Fuel & Transportation Co., Boston, Mass.; the Seaboard By-product Coke Co., of Jersey City, N. J.; and the Koppers Co., of Pittsburgh, Pa. Those five I wish you to remember for a moment.

Mr. CROWTHER. Why not put the names of the other signers in the record?

Mr. BOWER. I would be very glad to have them all printed in the record. I have a reason for calling especial attention to the group I have mentioned, and I have no objection to all the names going in the record. The other signers were: Alabama By-products Corporation, Birmingham, Ala.; Camden Coke Co., Newark, N. J.; Citizens Gas Co., Indianapolis, Ind.; Coal Products Manufacturing Co., Aurora, Ill.; Chattanooga Coke & Gas Co., Chattanooga, Tenn.; Donner Union Coke Corporation, Buffalo, N. Y.; Domestic Coke Corporation, Fairmont, W. Va.; Gulf States Steel Co., Birmingham, Ala.; Inland Steel Co., Buffalo, N .Y.; La Velle Iron Works, Wheeling, W. Va.; St. Louis Coke & Chemical Co., Chicago, Ill.; the Hanna Furnace Co., Cleveland, Ohio; the Milwaukee Coke & Gas Co., Milwaukee, Wis.; Toledo Furnace Co., Toledo, Ohio; the Brier Hill Steel Co., Youngstown, Ohio; the Youngstown Sheet & Tube Co., Youngstown, Ohio; Woodward Iron Co., Woodward, Ala.; Zenith Furnace Co., Duluth, Minn.

Following the defeat of the Muscle Shoals appropriation, when the tariff bill passed the House, after it had passed the attention of the farmers was called to the fact that there was a duty of $12 a ton on ammonium sulphate

in the tariff bill, on the very product that they manufacture; and after they had argued that their production was ample for the American farmer and at as low a price as he could get it from anywhere, they turned right around and asked for this duty, and it was put into the tariff bill. There was no public hearing, or at least no printed hearing, and I have examined them very carefully to see what representations were made. But the duty of $12 a ton is in the tariff bill as it passed the House for the first time.

When we took up the matter we found they had been to the Senate Committee on Finance and had presented testimony there asking that the duty of $12 a ton be left in the tariff bill. They gave their reasons in the hearing before the Senate Finance Committee on Schedule 1. The hearing was held on July 30, 1921, before the Senate Committee on Finance, and in their statement they say: "What we do fear is abrupt and demoralizing fall of prices due to the flooding of our markets with unnaturally cheap material manufactured in German-subsidized, syndicate-controlled, war-built munitions plants, and that the American product will be displaced on the American market by unnaturally cheap material made by low-priced labor in these plants built during the war to manufacture munitions." That is the danger they feared, and what they sought protection against was not the Chilean nitrate, but the German fixed nitrogen, and they got their duty. The reason I called your attention to the names of those signers of this statement is that in the list of organizations represented by this committee are the very five names that I read to the committee as signing this argument in opposition to the completion of the Muscle Shoals nitrate plant. That is, after defeating what the farmers believe was a chance to get cheaper nitrogen, and having, as they claimed, defeated that, and according to their letter preparing to carry their opposition through to this Congress, they turned around and got $12 a ton duty in the tariff bill protecting them in their high-priced nitrogen.

Mr. CROWTHER. May I interrupt long enough to say that I hope we might have a copy of the letter in which they claim to have defeated that measure. It seems to me we ought to put that letter in the record.

Mr. BOWER. I will try to procure a copy of that. I had one, but it has been misplaced. I will state this, that they did not state definitely in the letter that they had defeated this proposition, but the set-up was that this has been defeated, but is coming up again this fall, and we must be again prepared to protest against it. That is the whole tenor of the letter. I do not think they made the flat statement that they had defeated it.

Mr. CROWTHER. I think with that statement the letter need not be put in the record.

The CHAIRMAN. I think it would be a good thing if you could get the letter and put it in the hearing.

Mr. BOWER. I will try to get it. Understand me, Mr. Chairman and gentlemen, I am not criticizing the House of Representatives because of that duty of $12 a ton in the tariff bill, because I do not believe any member of the committee or the House knew that that duty was in there when the tariff bill passed.

The CHAIRMAN. This committee has nothing to do with the tariff bill.

Mr. BOWER. I understand that, but this bill has already passed the House. I do not want you to think that I think the members of this committee really knew that that duty on ammonium sulphate was in there, because if they had known it I am sure they would have taken it out.

Mr. CROWTHER. We could not take it out; the bill was passed under a rule and there was no way to amend it, or take anything out of it.

Mr. BOWER. The thought in our minds is that the arguments which have been presented to you have been that we should be left to depend upon such sources of industry that would do away with all our efforts to get cheap nitrogen and all we want of it. We would never get it.

The next great source of nitrogen produced in America is cottonseed meal, and there we are making an economic mistake in putting back in the soil cottonseed meal.

Cottonseed meal should go to the dairies of Mr. Crowther's State and of Iowa to feed the cattle or to feed their stock. It is much more valuable for that than to feed the soil. Then there is also the tankage and the blood meal and other by-products of the packers' industry which are going into hog feed, and they should not go into soil to be used in the production of crops. All of the producers of by-products contend that their interests in this by-product should be protected as against the interests of agriculture trying to feed and clothe the country and maintain soil fertility.

It is interesting to note in that connection, in dealing with cottonseed meal, that the Southern Cotton Oil Co., the largest cottonseed meal producer in the South, is owned outright by the Virginia-Carolina Chemical Co., which company James B. Duke controls. He also owns 24 per cent of the American Cyanamid Co., and the Virginia-Carolina Co. also owns 26 per cent of the American Cyanamid Co. I notice in the testimony it was stated that the amount of stock that Mr. Duke owns in the American Cyanamid Co. is 23 or 24 per cent. That amount was indefinite, but the ownership in the American Cyanamid Co. of the Virginia-Carolina Co. was definitely fixed at 26 per cent. We think it would add up to about 51 per cent if the figures were exact.

With that thought in mind, we turn to the statement of the American Cyanamid Co., whose representative at this hearing has denounced this proposition of Mr. Ford as a subsidy. When questioned as to what that subsidy consisted of, it was in the securing of water power at 4 per cent interest, and he further stated that his company would not have the nerve to make such a proposition. I would like to read what is said on page 11 of the hearings held before this very committee, the Committee on Military Affairs of the House, in 1916. This was a hearing by this committee held on February 11, 1916. Mr. McKenzie asked this question:

"As I understand your plan, Mr. Washburn, it is this: You recommend the cooperative plan, rather than the independent or Government-owned plant?"

Then the following occurred:

"Mr. WASHBURN. The only plan that seems feasible to me.

"Mr. MCKENZIE. Let me see if I understand you. Your plan of cooperative work is to take the power site, where the Government has constructed a dam for purposes of navigation, or to aid navigation, and the company that would manufacture this product would then build its structures alongside of this power site, and the Government would permit them to use the power; and they would pay, as I understand you, 3 per cent on account of the construction of the dam. In other words, the Government would build the dam and the company would erect a structure for the manufacture of the product, cooperating with the manufacturing concern, and it would manufacture this product for fertilizer during time of peace, and the Government would have the right to take the entire product during time of war, and that the company should pay annually to the Government 3 per cent on the investment in the dam; is that correct?

"Mr. WASHBURN. Upon the investment in the dam and such hydroelectric equipment as was necessary to put the power on the switchboard.

"The Government investment devoted to power normally would include the dam, and the power house and its equipment and the power would be paid for by the nitrogen industry at 3 per cent of the cost. That would be an annual tax upon the nitrogen industry."

In fact, this company which denounces the Ford proposition as a subsidy at 4 per cent interest was here before this committee in 1916 asking for the identical thing at 3 per cent interest, and they called it "proper Government cooperation." With such testimony as that they come before you and ask that this contract they have made, which they say is a moral obligation, shall be lived up to. I think they have violated all of the morality that is in the contract, and the Acting Judge Advocate General of the War Department says there is not any legal point involved.

Their representative stated that if you did this thing in time of war you would have to deprive the agricultural interests of a product of this plant. His solution was to deprive us in time of peace, so as not to deprive us in time of war. With such an argument as that, he did not respect the intelligence of the committee. He said that they could not make cheap fertilizer in this plant. I would like to refer again to page 14 of the hearing before the Agricultural Committee of the House held on February 9, 1916, where Mr. Washburn stated:

"My anticipation is that the establishment of the nitrogen industry, as it can be established with what I believe, and what I believe would appeal to those who study the subject, is the proper and legitimate Government cooperation, will give the farmer his fertilizer at one-half of what he would otherwise pay for it."

We submit that if the Government will complete this water power and allow Mr. Ford to have it, we will get fertilizer at one-half of what we would otherwise pay for it.

The representative of the American Cyanamid Co. stated again that an idle plant is better preparedness than an operating plant. I do not know whether

the committee wants me to continue this parallel right on or not. I do not know exactly what to call it. But in a hearing before this very committee on that question, Mr. Washburn, on page 10 of the hearings on February 11, 1916, made the following statement:

"The staff that would steadily be employed in this plant would be 2 per cent to 12 per cent of the number that would be required in the event of war for its full operation. Chemical plants of this kind require a trained body of men; and in event of war threatening the country, we should have almost insuperable difficulty of training from green hands substantially 90 per cent of the requisite directing and working force. It is fairly a matter of grave doubt whether under the unsettled conditions and excitement of approaching war and the exigent demands upon every one connected with the Army and Navy, such a plant could be placed in full stride in less than a year. It may be conceivable that a plant of this sort could be maintained in idleness without such a degree of deterioration as to render it useless, but it is highly improbable that it would be so maintained, and a country which should rely for its powder supply upon the practically indefinite maintenance in working of an idle plant composed of highly delicate and complicated appliances would take a most extraordinary risk, which, if it can be avoided, would be wholly unwarranted. A minor objection would be the cost of maintaining such a plant in readiness for operation, its upkeep, the interest on the idle capital."

So in 1916 it was an operating plant that would protect the Government against the inefficiency, and now it is an idle plant, and they propose an idle plant.

Furthermore, this plant is a Canadian plant, built in Canada, and manufacturing its product in Canada, and paying taxes in Canada upon the plant.

Now, we come to the other great interest we believe will be affected by this development. That is Chile and the sodium nitrate industry of that country. Since 1880 there has been an export duty of $12.53 per ton—that is, per long ton—or $11.88 per short ton, on each ton of nitrate of soda exported from Chile. This has not been changed since that time, in spite of the claim of the by-product coke-oven industry that they are fully protecting the interests of the farmer. I submit that that is not true. There is no competition in supplying the American farmer with nitrogen when they will allow the foreign country to charge us an export tax of $11.88 on every ton we use. In 1918, when we got into the last end of the war, because of contracts which could not be canceled that duty amounted to $20,135,960.60. In 1913, a normal year, it amounted to $7,381,874.08. Up to July 1, 1919—and I have not prepared the figure since that time—the duty we had paid to the Chilean Government amounted in total to $163,647,680.68, for which the American taxpayer got nothing, and it did not contribute one iota to the value of the Chilean nitrate. Chilean nitrate is an absolute monopoly. There is a board called the Chilean nitrate board on which sit two representatives of the Chilean Government, and this board fixes the price and allocates the amount of Chilean nitrate which are sold to foreign countries.

In the testimony before Mr. Graham's committee questions were asked of Mr. Myers, who is the American representative of the Chilean nitrate industry, as to whether this group fixed prices, and he admitted it was so and then modified his statement saying he did not like the word fixed, that they stabilized the prices. But the prices are fixed just the same.

In the hearing before the Committee on Expenditures in the War Department, part 54, serial 6, page 3551, the following conversation develops this point:

"Mr. ALMON. Who fixes the price of Chilean nitrates?

"Mr. MYERS. The directorate of the association.

"Mr. ALMON. The Chilean association?

"Mr. MYERS. Yes, sir; in Chile.

"Mr. ALMON. It is in the form of a trust of all of the producers of Chilean nitrate, and one of its purposes and functions is to fix the price of Chilean nitrate, as I understand you?

"Mr. MYERS. Yes; but to stabilize the price is the word I prefer to use. 'Fix' sounds arbitrary and as though you were attempting to squeeze somebody. I do not think it fair and proper to use the word 'fix'; they are not extortioners or working in that sense at all."

I want to read once more a little bit from this report of the nitrogen products committee of the British Government, paragraph 413, on page 83.

The CHAIRMAN. What document is that?

Mr. BOWER. This is the final report of the nitrogen products committee to the ministry of munitions of the British Empire, who have made the most exhaustive study of the fixation of nitrogen that has ever been made, and the committee was made of the best men they had in the British Empire. They cooperated with Italy and France and sent the committee to Germany and studied the occupied territory there. This is their final report to the ministry of munitions of war of the British Empire.

The CHAIRMAN. What year was that?

Mr. BOWER. That was in 1920.

In paragraph 413, on page 83, it says:

"It is evident from the above figures that the supremacy of the Chilean nitrate industry is already being challenged, and the near future holds out the prospect that ammonium sulphate or synthetic nitrogen products may become the dominant factor in the nitrogen market and govern the price of nitrate instead of following it as hitherto."

I do not believe, as a summing up of our thoughts along that line, that I can do better than read the final summing up of this committee and their recommendations and their findings, because the farmer has to depend upon other people to do this work. We think this report is probably the most authentic report that has been made. Here are the final recommendations, preceded by a statement of salient facts. This is paragraph 654, on page 133:

"In making the recommendations set out below the committee has been guided by the following salient facts:

"(*a*) The sources of supply of combined nitrogen in the United Kingdom must be increased considerably if the existing and prospective home demands are to be met and the prewar scale of exportation is to be maintained.

"(*b*) The existing sources of supply of combined nitrogen in the United Kingdom proved wholly inadequate for meeting the war demands.

"(*c*) The risks and costs of importation during war are very serious.

"(*d*) Combined nitrogen (as cyanamide or ammonium sulphate) can be obtained by synthetic processes at a cost, at the factory, which is less than half the market price of combined nitrogen from other sources, prewar conditions being taken as the basis in each case.

"(*e*) Concentrated nitric acid can be made by synthetic processes for about half the prewar cost by the standard retort process via Chile nitrate.

"(*f*) The ammonia oxidation process provides a means whereby, during a state of war, the importations of Chile nitrate would be rendered unnecessary.

"(*g*) The world's demand for combined nitrogen appears to double every 10 years. The increased production during the war has not been more than the normal rate of increase during peace.

"(*h*) The actual consumption of combined nitrogen for agriculture in the United Kingdom has practically doubled during the war, and there is certain to be a further increase.

"(*i*) No very large increase in the output of by-product ammonia in Great Britain in the immediate future seems probable."

It is on those salient facts that they made the following recommendations with reference to the calcium cyanamide process:

"The committee recommends that this process should be established in Great Britain without delay, either by private enterprise (supported, if necessary, by the Government) or as a public work."

Now, with reference to the testimony of the National Fertilizer Association. They have sent out a great deal of propaganda in opposition to this proposition of Mr. Ford.

In spite of that propaganda in opposition to the Muscle Shoals development they have come forward with no proposition to accomplish the results we seek, which I believe the committee will agree are necessary for us to secure if we are to produce crops and maintain our soil fertility. They seem to be, as Mr. Greene expressed it in questioning Mr. Hammitt, playing the part of a dog in the manger. They do not come forward with any proposition to operate the plant and give us the results we want, and yet they say Mr. Ford shall not do it. I have here the propaganda sheets which they sent out. I do not think I will take the time of the committee to answer those. No. 1 sheet, which put the cost to the Government at something over a billion dollars, is answered by the bond issue which we advocate and ask for as a measure to establish this

plant and finish it so that there will be no additional expense to the Government required. Then, furthermore, gentlemen, you do not compound your interest on investments of that kind, because if you did you never could build a battleship, and you never could put a drop of water on an irrigation project, if you started to compound interest in any such way as this. That is the way Col. Cooper arrived at his figures, compounding interest on a sum of money which is not in existence—in other words, compounding interest on what he claims is a loss. You can compound interest on Mr. Ford's amortization proposition because he provides an actual fund with which the compounding of interest is to take place, but you can not do it on a minus quantity, if there is such a thing.

The CHAIRMAN. I have a letter from Mr. Cooper, just received before we began the hearing this afternoon, which he asks me to put into the record, showing that he has revised his figures somewhat.

Mr. BOWER. In reference to what is stated about the ammonium sulphate industry by Mr. MacDowell, that the ammonium sulphate industry will supply all of our needs, I find that propaganda sheet No. 2 and sheet No. 3 and sheet No. 4 are all based on the ammonium sulphate industry supplying the demands of the American farmer. I would like to put in the record an editorial from the Oil, Paint, and Drug Reporter, which is their authority in their entire propaganda in reference to securing information as to prices. I would like to put into the record this editorial from that paper, taken from the issue of Monday, January 23, 1922. It is headed, "Opportunity calls to nitrate." It says:

"Conditions incident to several industries have brought about a shortage of ammonium sulphate. Resumption of normal activity in producing circles has been slow, but apparently it was not, for a time, slow enough. So it came to pass that at a time when the manufacturers of fertilizer mixtures in which ammonium sulphate is a component were not ready to understake extensive operations, stocks of that chemical had piled up in producers' hands to such an extent that, curtailment of production entailing utter waste of a valuable by-product, unloading tactics were in order. As is customary in such a state of affairs, the price of sulphate was reduced to a comparatively attractive figure. The American buyers, however, were not in a purchasing mood, and foreign interests gobbled up the supply. Now, when the apathy, or despondency, or pessimism of domestic consumers has been somewhat dissipated, and they feel a need for perhaps limited amounts of sulphate, there is practically none to be had.

"This situation, which supplies new evidence of the influence of industrial interdependence, is avidly seized upon in certain circles to point a moral as to what may happen to American industries of many sorts. Some are vociferously declaring that the domestic ammonium sulphate producers face a future of gloom if not of extinction. A parallel is drawn with the position of American producers of potash, and it is asseverated that domestic consumers of sulphate will follow the example of potash users—they are largely the same folks—and turn to Germany for their supplies, leaving the American producer high but not dry, rather bathed in cold perspiration.

"Some months ago there might have been every reason to accept this direful prediction. But, with the destruction of the Oppau nitrogen plant, Germany has been left somewhat in the background in the ranks of producers of ammoniates. As a shortage of ammonium sulphate, similar to that in this country, prevails in Great Britain, and for similar reasons connected with production, little relief offers in that direction. Meanwhile, the Muscle Shoals deadlock remains unbroken.

"Is the condition serious? To a certain extent, yes. But we are inclined to look upon it as an ill wind which will blow good to the Chilean nitrate oficinas. The result, doubtless, will be a higher cost of fertilizers, containing nitrogen, for the supply of organic ammoniates, vegetable, animal, or fish is not such as to promise relief from the ammonium sulphate shortage. Chilean saltpeter seems to have another inning coming.

"The obligatory change from ammonium sulphate to sodium nitrate as the source of nitrogen for fertilizing purposes, at least, may be expected to be but temporary. If the producers of the former desire to regain the market their success of recent date in that direction will be in their minds. It may well be that they look to other fields for consuming demand. Of course, they may have to revise their point of view because of the development of a domestic nitrogen fixation industry, but, apparently, they now are content to supply the customers who were ready to buy when they earnestly desired to sell. It is certain that they can not increase production, the genesis of their product decrees otherwise. It is not their fault that domestic consumers did not get the supplies recently available. Chile may yet get in funds."

You will notice their reference to coke there. That is, the coke-oven industry can not increase to meet the demands for fertilizer unless there is a demand for coke. That is from the issue of January 23, 1922.

Mr. MacDowell, representing the National Fertilizer Association, said that until the farmers use fertilizer materials more than at present there will be no use for the plant. But the amount we need is dependent upon the price, or the "more" we need is dependent upon the price, and if the price remains high we can not use the "more." So on a basis of maintaining high prices for nitrogen, they will not let us use our proper amount in our soils. But if this plant will lower the price of nitrogen, its entire production will be consumed by the American farmer with avidity. Then he stated that the best way to get the fertilizer price down was to buy more of it. That is a nice circle on which to start the farmer chasing around; that is to say, if he buys more fertilizer he will get it at a lower cost, and if he gets it at a lower cost he will buy more of it. Where do we get on that circle if we are to start going around? We want to get somewhere. Also that the cost is only incidental to the farmer: but we do not see any solution in getting his proposition started. In refutation of what he stated, the biggest tonnage the fertilizer manufacturers ever produced or the biggest tonnage ever produced by the fertilizer association was in 1918, when it was 8,000,000 tons. I submit that the prices of fertilizer in 1918 were the highest they ever had. So it does not follow that if we use a lot of fertilizer we get cheap fertilizer. In 1918 the price of farm products was high, and the farmers could afford to buy high-priced fertilizers, and they did, and now that the prices of farm products have dropped the consumption of fertilizer has virtually ceased, and instead of building up the fertility of the soil we are mining it and not putting anything back. But he supposes that the farmers could use these superphosphates. He stated that they ship that stuff to New Zealand. I do not know what the New Zealand people did with it. Of course, what they shipped to New Zealand, on account of the high freight charges, was the superphosphates; they shipped the 40 and 45 per cent material to New Zealand instead of the 16 per cent.

The American Fertilizer Handbook for 1920, page 39, has this statement:

"The Ammo-Phos works in New York Harbor was in steady operation during the year, practically all of the output going into the export field. This product, which is made in two grades, one containing about 13 per cent ammonia with 48 per cent available phosphoric acid and the other 20 per cent ammonia with 20 per cent available phosphoric acid, commands a premium in the export trade on account of its high concentration of plant food with corresponding reduction in transportation costs."

The production of high-grade materials of that character at Muscle Shoals will correspondingly reduce our freight rates, as well as the export freight rates, which these gentlemen would have to pay in shipping their fertilizers abroad. They ship these high concentrates out of the country and leave us the low concentrates with the high freight rates.

Mr. MacDowell stated that plants required a balanced ration, and that the 2–8–2 and 3–9–3 were good fertilizers. I would like to give you a little table of the food requirements of plants. Thirty bushels of wheat require 35 pounds of nitrogen, 15 pounds of phosphoric acid, and 9 pounds of potash; 75 bushels of corn require 60 pounds of nitrogen, 20 pounds of phosphoric acid, and 16 pounds of potash; 60 bushels of oats require 40 pounds of nitrogen, 16 pounds of phosphoric acid, and 11 pounds of potash; 4 tons of alfalfa require 190 pounds of nitrogen, 43 pounds of phosphoric acid, and 178 pounds of potash; and 2½ tons of clover require 103 pounds of nitrogen, 20 pounds of phosphoric acid, and 82 pounds of potash. So the 2–8–2—that is, 2 per cent nitrogen and 8 per cent of phosphoric acid—is not a balanced ration for a plant.

What has established that formula? The price. They can not put 10 per cent of nitrogen in there and furnish fertilizer at a price at which the farmer can buy it, because the nitrogen is the most expensive element. Where we only go to 2 and 3 per cent of nitrogen the total fertilizer bill is made up of over half on the nitrogen cost, and the other two items, the phosphoric acid and the potash, make up the other half. He says we do not consume it and that the lower grade of 2 per cent and 3 per cent are what we need. The reason it is 2 and 3 per cent is because it is sold on a tonnage basis. If he puts 10 per cent in, the price goes up and the farmer can not use it, and

he does not buy it. But they balance it on the basis of the price of material and the profit they can make out of selling a ton. That is what we are trying to get away from. That is one of the reasons why we have hope of getting an increased percentage in commercial fertilizer out of Mr. Ford's proposition. We would like to get away from the 2–8–2 and the 3–9–3; we would like to get some of these superphosphates, because if we can cut our freight rates we can get our product on much more advantageous terms. We would have a saving in price; it might not be in the factory cost, but if you make ammonium phosphate and sell it to the farmers direct, the saving between the factory door and the farm would put that plant food on the farmers' soil at half the price. If the factory cost was on a parity per unit of plant food the saving of warehousing, hauling, and the dealer's profits, based on a per ton cost on a high-grade material all of those elements of cost would be reduced to one-sixth after it leaves the factory door, and by the time it gets to the farm I venture to say it will be not over half the price of the former cost, and the identical thing would be true on all the high-grade material.

Now, with reference to the grades. I declare that sometimes I do not know what kind of a game the fertilizer people are trying to put on the farmer. In this Survey of the Fertilizer Industry, Bulletin No. 798, of the United States Department of Agriculture, dated October 20, 1919, on page 14, there is a table showing the distribution of fertilizer purchased in 1917, by grades. Starting at the beginning of that table there are four columns of grades, different combinations of nitrogen, phosphorus, and potash, that they have foisted off on the American farmer, and there is a total of 218 grades actually listed, with the percentage that each grade bears to the total, and of the 218 grades they made up 95.85 per cent of the fertilizer. Then at the end it says, "All other grades (724 grades) made up 4.15 per cent." That is not an intelligent proposition.

Then, in addition to that we have the brands. In the Federal Trade Commission's report on the fertilizer industry issued in 1916, on page 219, it lists the brands of fertilizer in the Southern States. We find there that the Virginia-Carolina Chemical Co. put on the market in Georgia 999 different brands of fertilizer, all made up of 2–8–2 and 3–9–3, and lots of it goes down to one-half per cent of nitrogen. So the farmer would never get as much as a pound on his soil after you had bought it, and yet that company, which comes here and asks you to protect their interest, registered 999 brands in one State to sell to the farmers; and the Armour Fertilizer Works, of which Mr. MacDowell is president, registered 977 additional brands. So that company would sell the farmer fertilizer on a tonnage basis and keep him away from the knowledge of what this plant food is, and continue this proposition of putting out, as this table I have showed you shows, this tremendous amount of different grades of this material. You will find that 52.79 per cent of all grades that went to the farmer is made up of 12 per cent or less of plant food. That is to say, in buying a ton of fertilizer we only get 240 pounds of fertilizer out of 2,000 pounds of material.

We have had a lot of talk about fillers. It is not the filler. I will not go that far in criticizing the fertilizer industry. That is not the crux of the situation.

Let me show you what they do. Take, for instance, the 2–8–2 grade. Let me read you this from this survey of the industry:

"If it is desired to make a mixture containing 2 per cent of ammonia, 8 per cent of phosphoric acid, and 2 per cent of potash (the well-known grade 2–8–2) and the materials at hand are cottonseed meal, containing 7 per cent of ammonia; acid phosphate, containing 16 per cent of phosphoric acid; and Nebraska potash, containing 28 per cent of potash, the method of making up the mixture will be as follows: Two per cent of a 2,000-pound ton is 40 pounds; in order to obtain 40 pounds of ammonia from 7 per cent cottonseed meal it will be necessary to use 571 pounds of cottonseed meal. The amount of phosphoric acid desired is 8 per cent of a ton or, in fertilizer parlance, 8 units, or 160 pounds. To obtain 160 pounds from a 16 per cent acid phosphate will require 1,000 pounds of acid phosphate. The amount of potash called for is 40 pounds and to obtain that from a 28 per cent material 143 pounds will be required. The total amount of materials used, therefore, will be 571 plus 1,000 plus 143, or 1,714 pounds. To this are added 286 pounds of filler in order to make up the ton."

The filler is not the great big thing in that, but they put in the 286 pounds of filler to make up the ton, and then you have the ton of 2–8–2. But they start with the cottonseed meal which carries 7 per cent of nitrogen, and then they have the acid phosphate which carries only 16 per cent of nitrogen. If we can get this proposition of ammonium nitrate carrying 35 per cent of nitrogen, and you will find that the superphosphate carries as high as 60 per cent of phosphorus, and if you take that kind of material and fix it you will get away from the necessity of the 2–8–2 stuff. But you can not get away from it without developing these high compound materials to start with. That is why I say you have to quit using the low-grade stuff, and you have to jump the creek in one jump; you can not do it step by step in a slow process.

"While it is likely that in the 5,000,000 tons of fertilizer produced in 1918 more than 270,000 tons of filler were used, the filler constituted only a small proportion of the inert matter in the mixture. Thus, in the examples, the 2,000-pound ton contained 286 pounds of filler, while the total of inert matter was as follows: Of the 571 pounds of cottonseed meal, 531 pounds were inert; of the 1,000 pounds of acid phosphate, 840 pounds were inert; and of the 143 pounds of Nebraska potash, 103 pounds were inert; so that the total inert matter in the plant-food carrying materials was 1,474 pounds; and the ton of fertilizer consisted of 240 pounds of plant food, 1,474 pounds of inert matter in the plant-food carrying material, and 286 pounds of filler."

That filler would not be so awfully bad if we could get away from the 1,474 pounds of inert material in the plant-food bearing compounds, which made up 1,714 pounds of our ton, and that is exactly what we are trying to do through the operation of this plant.

The National Fertilizer Association has continuously opposed this development. It opposed it when it was a proposition of Government operation. I have the report here of the twenty-eighth annual convention of the National Fertilizer Association, held at White Sulphur Springs June 20–23, 1921, and on page 34 we have the report of the Washington office of the association. In discussing the bill before Congress for the operation by the Government of the Muscle Shoals nitrate plant, the report says:

"This bill was favorably reported by the Senate Committee on Agriculture, and under the leadership of Senator Underwood of Alabama was forced through the Senate, although certain important amendments offered by Senator Wadsworth of New York were adopted. Those amendments would require the corporation to assume interest payments on a bond issue to be purchased by appropriation in the bill, and whenever such payments defaulted the enterprise would have to cease. Even that form of the bill was objectionable; and we continued our opposition to it. When the bill went to the House, Chairman Kahn, of the Military Affairs Committee, decided that in view of the congested condition of the calendar it would be a hopeless task to try to obtain consideration for it, and it died in committee with the expiration of the Congress on March 4."

It came to life again when Mr. Ford made his proposition to take it over, and they are here now fighting that proposition in every way possible. You will notice that they do not object to the Alabama Power Co.'s proposition. Mr. MacDowell stated he was in favor of the water power, but he said, "Do not operate the nitrate plants; you will make a bad bargain if you do that." But the farmers will not make a bad bargain if you do that, and we ask for your acceptance of the Ford proposition, because we feel that he will do these things. You can cooperate in doing them, and we believe what is proper Government cooperation in the first case is proper cooperation in connection with Mr. Ford's offer. I want to call your attention to the fact that Mr. Ford, on his own initiative, suggested in his first proposition, which the farmers never knew was coming, that a board of farmers sit in with him in carrying out this proposition. That came from him; we had never talked to him about it. It is the first time the farmers ever have been asked to sit in with any corporation that was furnishing them any material, to see that they were getting a square deal. We believe we will get it. If we do sit in with Mr. Ford in connection with the operation of this plant, we will get a square deal and we will get the results we seek, and we will have practically a new policy on the water-power development. That is one of the big things. There will be plenty of power for the fertilizer industry, and there will be other water power developed, and we will jump this creek in one jump. That is what Mr. Ford intends to do, and he will do it.

Then, too, we will go a long step forward in the solution of our soil-fertility problem.

In closing, I would like to quote once more from Theodore Roosevelt. In the Outlook of September 7, 1912, he wrote:

"The Government must cooperate with the farmer to make the farm more productive. There must be no skinning of the soil. The farm should be left to the farmer's son in better and not worse condition because of its cultivation. Moreover, every invention and improvement, every discovery and economy, should be at the service of the farmer in the work of production."

Gentlemen, he must have visualized the very question which this committee is called upon to decide when he made that statement. We are asking that this invention, this discovery of the fixation of air nitrogen, be placed at our disposal to protect the fertility of our soil.

I thank you very much, Mr. Chairman and gentlemen.

Mr. McKENZIE. Mr. Bower, I understand that you, like Mr. Silver, are here representing the farmers of the United States?

Mr. BOWER. I represent the American Farm Bureau Federation. The Farmers' Union have also indorsed this proposal by resolution, and the National Grange is with us on this proposition.

Mr. McKENZIE. In section 14, "the company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other fertilizer compounds (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control." Do you consider that the paramount element of consideration in Mr. Ford's proposition?

Mr. BOWER. I do not know, Mr. McKenzie, whether that element is paramount or whether section (a), following that, is paramount. But taken together they make a combination which has a very strong appeal to the American farmers. That paragraph (a) would provide for research in connection with the electric-furnace proposition and what it will do, along the lines that Mr. Swann and Dr. Whitney have testified about before the committee.

Mr. McKENZIE. The Alabama Power Co., in paragraph 2 of its proposition, states as follows:

"2. The company offers to furnish the Government, or anyone it may designate, with free power in the amount of 100,000 secondary horsepower for the production of fertilizer and munitions of war and research in connection therewith; and if for any reason this use of the power is discontinued the company will purchase same. This feature of the offer has the advantage of providing the Government a return on the $17,000,000 it now has invested in the water-power project." So far as the Alabama Power Co. is concerned, is there any indication of a guarantee that they will engage in the manufacture of fertilizer?

Mr. BOWER. Absolutely none whatever.

Mr. McKENZIE. Or any ingredient?

Mr. BOWER. None whatever. I wish to call your attention to the report of the Secretary of War in connection with it. He calls attention to the advantage of that 100,000 secondary horsepower as being a return on the $17,000,000 expended, evidently understanding thoroughly that the nitrate plant was not to use the 100,000 horsepower, and the Government would sell it and get a return on the $17,000,000.

Mr. McKENZIE. The Alabama Power Co. is pretty thoroughly intrenched in that section of the country, is it not?

Mr. BOWER. I understand so; I am not familiar with that situation. But the thought with us is that the Alabama Power Co. with its old association with and interlocking officers in the American Cyanamid Co., and the American Cyanamid Co. being so closely connected with the Virginia-Carolina Chemical Co., and the Virginia-Carolina Chemical Co. being so closely connected with the cottonseed meal concern, the whole thing is tied in together.

Mr. McKENZIE. The proposition of the Alabama Power Co. is to turn over to the Government 100,000 secondary horsepower?

Mr. BOWER. According to the flow of the river. We do not even get secondary horsepower through the use of the steam plant at all.

Mr. McKENZIE. That involves, if you will permit me, either governmental operation of the nitrate plant or operation by a lessee of the Government.

Mr. BOWER. Limited to 100,000 horsepower, which he would have to shut down perhaps four, or five, or six months of the year.

Mr. McKENZIE. Having in mind the evidence submitted to this committee bearing on the contract on which the Alabama Power Co. pretends to stand now, in which the Government of the United States would be estopped from exercising its function, what is your judgment as to the prospective extent of either Government operation of the nitrate plant or operation by a licensee of the Government, when subjected to the will of the Alabama Power Co. for its power?

Mr. BOWER. None whatever; and not only that, but you have no assurance of power to operate.

Mr. McKENZIE. Mr. Ford's proposition so far as that is concerned, is a straightforward, direct contractural proposition to engage in that business, not with the secondary power, but with the primary power.

Mr. BOWER. With enough power to operate at full capacity, either primary or secondary power; but if the secondary power gives out we get primary power because the plant goes at full capacity.

Mr. McKENZIE. I am not expressing any opinion in regard to the wisdom of the policy in Mr. Ford's contract, but I want your viewpoint, representing the farmers of the country. I take it, from the proposition of the Alabama Power Co. as I have read it, that, as a mere matter of dollars and cents, pawning your jewelry at a pawnshop, or selling something in order to get as much out of it at the time being as possible, it may be that the Alabama Power Co.'s offer is a better offer in the matter of dollars and cents then, perhaps, the offer of Mr. Ford.

Mr. BOWER. I would not agree to that promise.

Mr. McKENZIE. I want to ask you this question: Whether or not you gentlemen have studied this question, not alone from the standpoint of dollars and cents, and taken into consideration the fact that it is a proposition in which there is more involved than the $5,000,000 Mr. Ford will pay for certain properties down there, but also that he binds himself in a continuing obligation to perform a duty or carry on an operation that will, in your judgment, I take, be of lasting benefit to the agriculturists of this country. Is that your position?

Mr. BOWER. Absolutely so.

Mr. McKENZIE. For that reason you do advocate the acceptance of the Ford offer?

Mr. BOWER. Exactly so.

Mr. McKENZIE. Having in mind not a mere monetary transaction but a monetary transaction coupled up with performance, to be performed hereafter along lines set out in the contract for the benefit of the agriculturists of this country?

Mr. BOWER. Yes, sir. I do not like it tied up with the better financial proposition. I do not agree with you if that is what is in your mind.

Mr. McKENZIE. We are not discussing that.

Mr. BOWER. Aside from that it is undoubtedly true, as evidenced by our activity and insistence last year, that this Government plant be operated at Government expense.

Mr. McKENZIE. Let me ask you this question: What is your judgment as to the fairness of a computation of cost, based on a straight-out cash proposition, without any conditions attached to it whatever, and an esimate of cost based on the proposition such as the Ford offer? Is there any comparison that you can draw that would be a fair one, in your judgment?

Mr. BOWER. I do not quite understand the intent of your question?

Mr. McKENZIE. If we sold the property directly to Mr. Ford for the amount stipulated and turned over the water power to him?

Mr. BOWER. Taking section 14 into consideration, as a proposition to maintain it for the Government?

Mr. McKENZIE. Yes. Is it fair in estimating the cost, or, putting it the other way, the benefits to Mr. Ford to figure as though it were a straight-out monetary proposition?

Mr. BOWER. No; I think you have other factors that come in there. Take the maintenance of the plant from that standpoint. The Army engineers have testified that the depreciation is $2,500,000, and the cost of maintenance is $200,000 a year; so there is $2,700,000 of expense to the Government which Mr. Ford assumes, and in two years he will pay you more than you would get from the Alabama Power Co. in cash.

Mr. McKENZIE. In your judgment, this is not a proposition or a matter of dollars and cents in a trade between the Government and a purchaser?

Mr. BOWER. No, I do not think so. Then you should remember this: Suppose you agree to charge Mr. Ford 8 per cent interest on the water power. We farmers are going to pay that in the cost of our fertilizer. If you charge him $20,000,000 for this nitrate plant the farmers will pay the interest on that in-

vestment. It is a fair part of the cost for this development and has to be figured in. Then the amount of $5,000,000 for this plant is questioned by the opposition. They say it is a subsidy, and then they say in the same breath that the plant can not possibly be operated at a profit. If the plant can not be operated at a profit, then it is not a subsidy for $5,000,000.

Mr. McKENZIE. I am not going to take up the time of the committee with any more questions except in connection with one other matter. What percentage of potash used in this country is imported?

Mr. BOWER. At the present time about 100 per cent, or close to it. During the war we built up a potash industry, and in some sections that was studied quite carefully, especially by the Trona Corporation and the Solvay Co. at Searles Lake. But there is practically none in operation to-day, and we are importing all of our potash.

Mr. McKENZIE. Did I understand you to say that there was a proposed duty to be placed on potash coming into this country?

Mr. BOWER. There is a proposed duty. It is a peculiar duty, and it was in the bill as it passed the House. It goes off in 5 years, but it is a very high rate of duty for the first 3 or 4 years of that term. We have registered our protested against the placing of a duty of that kind on potash.

Mr. McKENZIE. You believe in the effort to develop the potash industry in our own country?

Mr. BOWER. We do.

Mr. McKENZIE. Would you consider it better public policy to take care of the investigation and development of that natural resource by the payment of a bounty rather than putting a duty of 98 or 99 per cent on that article when it comes from foreign countries?

Mr. BOWER. We do; and I might say to the committee that we prepared a little scheme to do that very thing, and we submitted it first to the American Potash Producers' Association, but they turned us down.

The CHAIRMAN. I suggest that you submit it to the Finance Committee of the Senate.

Mr. BOWER. That is where it has been submitted.

Mr. HULL. Mr. Bower, if we accept the Alabama Power Co.'s proposition, do you think it possible for the farmers to organize a company to develop the fertilizer industry?

Mr. BOWER. I do not think, in a proposition of this kind, at our present stage of cooperative development we could handle the proposition satisfactorily to the Government or to anyone else. We would have to agree to maintain a plant and keep it in good condition, and I do not think that is a possible solution right now.

Mr. HULL. Do you think the Government should do so?

Mr. BOWER. I do not think anybody can do so under the arrangement of power, secondary power, according to the flow of the river, which may not be any power at all. You can not operate a plant on that basis.

Mr. HULL. You are satisfied that the Ford proposition is a better proposition than the Alabama Power proposition?

Mr. BOWER. Financially, for the Government, yes; and for the interests of the agriculturalists, yes; for the maintenance of that plant for the manufacture of explosives, yes.

Mr. HULL. I do not see how you arrive at the financial part of it.

Mr. BOWER. Mr. Ford pays $5,000,000, and the Alabama Power Co. pays $5,000,000, less the cost of constructing the locks. Col. Cooper has testified those locks will cost $4,500,000. I have a memorandum which I received from Gen. Taylor, the Assistant Chief of Engineers in charge of river and harbor works, in which he says that the amount allotted for navigation purposes is $4,500,000, so the Government would not get more than $500,000 out of the Alabama Power Co. in cash.

Mr. JAMES. You read into the record certain statements made by Mr. Washburn in 1916.

Mr. BOWER. Yes.

Mr. JAMES. What bill was being considered, and before what committee?

Mr. BOWER. I do not know that he addressed himself to any particular bill at that time, but his testimony resulted in the writing of section 124 of the national defense act.

Mr. JAMES. You said that last year certain gentlemen opposed this proposition?

Mr. BOWER. Yes.

Mr. JAMES. Before what committee?

Mr. BOWER. Mr. Washburn spent three days before the Senate Committee on Agriculture and Forestry on this bill.

Mr. JAMES. That was not before the House committee?

Mr. BOWER. No; there was no hearing on that before the House Committee, except the War Department experts.

Mr. JAMES. What was the bill you were particularly talking about?

Mr. BOWER. That was Senate bill 3390.

Mr. PARKER. Mr. Bower, clover and some other crops put nitrogen into the soil?

Mr. BOWER. Yes, sir; if you plow it under.

Mr. PARKER. They take nitrogen from the air, and not from the soil?

Mr. BOWER. The plant does not.

Mr. PARKER. They cause nitrogen to be taken from the air?

Mr. BOWER. Yes.

Mr. PARKER. Alfalfa is one of those plants, is it not?

Mr. BOWER. Yes.

Mr. PARKER. And yet you refer to it as if it exhausted the soil instead of causing it to come from the air?

Mr. BOWER. You do not add to it unless you plow it under.

Mr. PARKER. Did you not refer to it in that way?

Mr. BOWER. I gave that as the amount of nitrogen consumed by the plant.

Mr. PARKER. Not consumed from the soil?

Mr. BOWER. No; not necessarily.

Mr. PARKER. Therefore not needing to get it in that way because it gets it out of the air?

Mr. BOWER. A large proportion of it; yes, sir.

Mr. PARKER. The American Cyanamid Co. makes cyanamid, you say, at the Canadian plant?

Mr. BOWER. Yes.

Mr. PARKER. Is it a water power or a steam power plant?

Mr. BOWER. It operates by power from Niagara Falls.

Mr. PARKER. You quoted from a British report. Have you got it here?

Mr. BOWER. Yes.

Mr. PARKER. They gave a recommendation which you read as to the cyanamid process?

Mr. BOWER. Yes.

Mr. PARKER. Did they make other recommendations which you d'd not read?

Mr. BOWER. They made other recommendations. I said the recommendation I read was in regard to the cyanamid process.

Mr. PARKER. You said they made a certain recommendation, and then you read the recommendation and we found it was in reference to the cyanamid process. D'd they recommend the Haber process?

Mr. BOWER. Yes; they recommended a small development of the Haber process.

Mr. PARKER. Did they make other recommendations?

Mr. BOWER. They made other recommendations, as we do as to the conservation of all nitrogen products.

Mr. PARKER. This was the only single recommendation in reference to the cyanamid process?

Mr. BOWER. Yes, sir.

Mr. PARKER. I notice from what you read that they said it might be hoped that nitrogen might be made as cheaply as it had been imported.

Mr. BOWER. They said it could be.

Mr. PARKER. Is that limited to the cyanamid process or to the other processes?

Mr. BOWER. No, sir; I would not think it was.

Mr. PARKER. Are not the other processes reported as being much cheaper than the cyanamid process?

Mr. BOWER. They are reported as such, but that is denied by others.

Mr. PARKER. They did not say the cyanamid process was cheaper?

Mr. BOWER. No; not necessarily.

Mr. PARKER. Has it not proved to be much more expensive?

Mr. BOWER. I do not think so.

Mr. PARKER. You do not know, do you?

Mr. BOWER. I know the cyanamid plants in Germany had operated at full capacity, and one of their Haber plants was destroyed.

Mr. PARKER. That was an explosion?

Mr. BOWER. Yes.

Mr. PARKER. They were working that at a larger capacity when it exploded?
Mr. BOWER. Not larger than the total cyanamid production.
Mr. PARKER. On the whole, were they not operating the Haber process much more than the cyanamid process?
Mr. BOWER. The cyanamid process was operated to the full capacity.
Mr. PARKER. Which was producing the more?
Mr. BOWER. I could not give you those figures.
Mr. CROWTHER. You said that what the farmers wanted was nitrogen, and the cheapest method, the one everybody looked forward to, was the air reduction method?
Mr. BOWER. Yes, sir.
Mr. CROWTHER. Mr. Ford does not intend to run an air-reduction plant, does he?
Mr. BOWER. Cyanamid is produced by an air-fixation process; there is no nitrogen except through the air-fixation process.
Mr. CROWTHER. The Haber process was supposed to be a very cheap method, was it not?
Mr. BOWER. It was supposed to be.
Mr. CROWTHER. And the plant would run with 20,000 horsepower, as compared with the 100,000 horsepower it takes to run the other plant?
Mr. BOWER. When it runs.
Mr. CROWTHER. That proved a failure?
Mr. BOWER. Yes.
Mr. CROWTHER. Do you think it would be a good thing to have a plant down there with all that explosive material around it, and all the other shops around it?
Mr. BOWER. I do not think so, and I think that is the reason Mr. Ford would not obligate himself to operate that plant.
Mr. CROWTHER. You are going to make the ammonium nitrate and turn it into ammonium sulphate?
Mr. BOWER. Not at all.
Mr. CROWTHER. All you are going to make is ammonium nitrate, and turn it into ammonium sulphate?
Mr. BOWER. Not at all.
Mr. CROWTHER. What else are you going to make?
Mr. BOWER. I have tried to explain the possibilities of manufacturing down there. Mr. Ford says nitrogen and other fertilizer compounds. According to one of the provisions of this contract he proposes to carry on research along the line that Mr. Swann, Dr. Whitney, and Dr. Tollman have told you are possible.
Mr. CROWTHER. Mr. Ford told you this?
Mr. BOWER. I think it is in the intent of the contract.
Mr. CROWTHER. You talked about a subsidy. It has been testified to here that that concern could run the ammonium nitrate plant at a considerable loss and get its profits from the immense water power development and other industries that might be tremendously profitable.
Mr. BOWER. That might be true.
Mr. CROWTHER. Then, there would not be any force to the subsidy proposition if they could balance the loss with their profits on the other thing, when you say they are crying that they could not operate it at a profit.
Mr. FIELDS. In regard to the filler material in fertilizer, in the 2–8–2 formula which you referred to, I believe you said there were 1,474 pounds of inert matter?
Mr. BOWER. Inert matter in the plant food-bearing material, and in addition to that they have filler, too.
Mr. FIELDS. You use filler?
Mr. BOWER. To make up the ton.
Mr. FIELDS. After all, this amount of inert matter such as filler has no plant food value?
Mr. BOWER. It has no plant-food value.
Mr. FIELDS. Whichever way they take it, after all, it amounts to the same as filler?
Mr. BOWER. Yes; but the word filler has a kind of bad meaning, that they put that stuff in to make it low grade. The crux of the thing is in the highly concentrated materials that we want.
Mr. FIELDS. This inert matter has no more plant-food value than the 286 pounds put in as filler?

Mr. BOWER. No, sir; in fact, it is often detrimental. The sulphuric acid proportion is even harmful.
Mr. FIELDS. Whatever you call it, if you could get away from it and could get down to the more highly concentrated fertilizers the farmers would be relieved of the expense of the freight charges, handling, bagging, and everything else that goes into the carrying of that inert matter or filler to the farm.
Mr. BOWER. Exactly so.
Mr. QUIN. The nitrogen is more costly than either the potash or the phosphoric acid, is it not?
Mr. BOWER. Yes, sir.
Mr. QUIN. What do you mean by the term unit in connection with fertilizer?
Mr. BOWER. I do not want to start to complicate this fertilizer question by introducing new terms. A unit is 1 per cent of a ton, or 20 pounds. The reason they use that is so they can compare the value of the various nitrogen fertilizers. The Chilean nitrate carries 16 per cent, and they say that is 16 units, 1 per cent being a unit. If they want to compare the price of nitrate of soda with ammonium sulphate they divide the price per ton by the percentage, which gives them the price per unit, so you can compare the two in that way. It is not fair to compare the price of a ton of nitrate of soda with a ton of ammonium sulphate, because the nitrate of soda carries 17 per cent and ammonium sulphate carries as high as 25 per cent.
Mr. QUIN. I wanted to get that information for the record.
The CHAIRMAN. I want to ask you one question: Most countries speak of the short ton as the standard ton, but I understand in buying Chilean nitrate it is sold by the long ton of 2,240 pounds?
Mr. BOWER. It is not sold to the farmer on a long-ton basis. We buy a short ton.
Mr. PARKER. The metric ton is nearly a long ton.
Mr. BOWER. Yes.
Mr. PARKER. All coal and iron are sold by the long ton?
Mr. BOWER. Yes; I believe so.
Mr. QUIN. According to your statement somebody hogs the farmer out of 200 pounds on the ton.
Mr. BOWER. Not necessarily; the price could be adjusted accordingly. That would not necessarily follow.
Mr. QUIN. On the unit basis at the present cost nitrogen would be $9 on the 3–9–3 formula; nitrogen would be $9, phosphoric acid would be $50, and potash would be $80? That is on the 3–9–3 formula.
Mr. BOWER. I do not know where that comes from. What is your price for the commercial fertilizer?
Mr. QUIN. That is the present market price.
Mr. BOWER. It would depend upon the sources of that nitrogen somewhat, too. I would not want to say those figures were definitely correct.
Mr. QUIN. What I am driving at is that Mr. MacDowell, the president of the National Fertilizer Association, appeared before this committee, and they had sent out to the Congressmen and, I guess, to other people a document wherein they set up that only 4 cents out of the dollar of the cost of fertilizer was for ammonium sulphate. Now, what percent of nitrogen is in ammonium sulphate?
Mr. BOWER. It depends upon what materials they use in making their mixed fertilizer. They might use ammonium sulphate or they might use nitrate of soda or they might use cottonseed meal. If they use cottonseed meal there would be 1 per cent and if they use ammonium nitrate there would not be any ammonium sulphate in it. The trouble with that proposition is that he does not figure, as we do, that if we cheapen the cost of nitrogen from one source we will cheapen the other sources, and if we cut the price of ammonium sulphate, as an illustration, way down we are going to cut the price of nitrate of soda and we are going to cut the price of nitrogen in cottonseed meal and the other sources, and there is where the whole thing falls down. Then, of course, he has figured in all the expense of bagging and mixing and hauling and carrying all this business out to the farm, and that does not have anything to do with the statement that the ammonium sulphate only costs 4 cents of the farmer's dollar.
Mr. QUIN. That was intended for the purpose of making it appear, and they said so, that this nitrogen at Muscle Shoals would not reduce the price of fertilizer, no matter how cheaply they produced it. What percentage of phosphoric acid on that sort of a basis would be in there?

Mr. BOWER. I could not tell you that, Mr. Quin. In the mixed-fertilizer goods phosphoric acid runs around 8 per cent of the total right along. It averages, possibly, a little better than that. It would run better than that, because a great deal of 16 per cent acid phosphate is sold as such, the farmer not being able to buy any nitrogen at all. We in Virginia can not afford to buy nitrogen except for our truck crops, and we buy 16 per cent acid phosphate and grow a clover crop and plow it under to get our nitrogen, but that is pretty expensive, and it about breaks a farmer's heart to plow under a good crop of clover when he sees the price of hay going up. That is the difficulty with that method of obtaining nitrogen. The farmer makes up his mind, "Yes; I am going to do that," and then about the time the clover crop gets up about a foot and a half high and the hay is a little short in his barn, instead of putting a plow in there he puts in a mower about 50 per cent of the time, and it does not get plowed under.

Mr. QUIN. In this method, you have three ingredients of fertilizer—there would also be potash; would the same analysis apply to that?

Mr. BOWER. Let me see that statement and see if I can straighten this out at all. [Reading:]

"Small part of fertilizer bill would be affected by operation of Muscle Shoals plant; 96 cents for other necessary ingredients, such as organic ammoniates, nitrogen, potash, phosphoric acid, etc., and for mixing, bagging, freights, and other necessary costs."

I do not believe I can unravel that for you, Mr. Quin, because I do not know what those mixing, bagging, and other costs are, and without that it would be pretty hard to figure what was the percentage of the potash cost or anything else.

Mr. QUIN. Different types of soil need different kinds of fertilizer, as you illustrated this afternoon, and different plants need different fertilizers.

Mr. BOWER. Yes; and the whole proposition is there. For instance, we can get along on our big alluvial and loessal soils of the Middle West and the corn belt section, because that soil is black with nitrogen. The humus is a large carrier of nitrogen, and that soil can grow crops without nitrogen applications, and we are doing it; but when you come down to our sandy soils of the coastal plains, in the trucking sections, you have got to give it all the nitrogen that the plants get, because there is not any in the soil.

Mr. QUIN. And all of these different 976 brands of fertilizer from one factory and about that many from another are merely deceptive processes so far as——

Mr. BOWER. I would not say that, exactly.

Mr. QUIN. Do we need that many brands?

Mr. BOWER. Oh, no; and it is a tremendous burden on us, but it is also done to protect their dealers; that is, one fertilizer manufacturer may have two or three different dealers in the same town, and in order that they do not figure they are competing with one another, one will carry one brand of 3–8–3 and another will carry another brand of 3–8–3, and they are identical material, but one is selling the Old Buck Corn Booster and the other is selling Royal Potato Sprouter, and that is the idea on which they are sold to the farmer, and it is an insult to the intelligence of the farmer to handle this thing in that way. And it is a burden upon us to have these low-grade materials compounded in so many ways, with all this different sacking and branding and bagging, and everything of that sort.

Mr. QUIN. Mr. Bower, these dealers all get a profit on the fertilizer they handle, do they not?

Mr. BOWER. Yes, sir.

Mr. QUIN. Then, the farmer starts out with the high freight on the filler, and then he comes to this drummer that sells it to the dealer, and then to the dealer for his profit, and then has his wareroom expenses, and then the farmer comes to town and says, "I want you to run me, Mr. Smith, this year," getting his fertilizer after paying the drummer's expense and the dealer's expense.

Mr. BOWER. And a big interest rate.

Mr. QUIN. On top of insurance charges and so on. Then, if this proposition of Mr. Ford goes through, and there is a cooperative method of handling it, would not that cut out the drummer's expense and the dealer's expense?

Mr. BOWER. Undoubtedly, if we can handle it in a cooperative way. That is one of the things, as Mr. Silver stated, we are having under consideration, the recognition of the cooperative purchasing of the product. We do not presume to say we can come here and take all of that product away from Mr. Ford's plant through cooperative organizations, but we are going to try and take just as much as we can to get away from that practice, and with the present fertilizer industry we have had a time and a half getting them to deal with cooperative enterprises at all. A good many of them will not quote us.

Mr. QUIN. They are not encouraged by them to say the least.

Mr. BOWER. Not at all.

Mr. QUIN. Mr. Bowers, the Virginia-Carolina Chemical Co. mentioned by you sells fertilizer in several States, does it not?

Mr. BOWER. Oh, yes; it is one of the large fertilizer manufacturing concerns.

Mr. QUIN. Is this Mr. Duke connected with that concern?

Mr. BOWER. Yes; he owns a controlling interest in the Virginia-Carolina Chemical Co.

The CHAIRMAN. I think that has been testified to a half a dozen times.

Mr. QUIN. The American Cyanamid Co. man told me not.

The CHAIRMAN. Mr. Duke owns 26 per cent of the stock.

Mr. QUIN. In the American Cyanamid Co., but this man denied his having any interest in the Virginia-Carolina Chemical Co.

The CHAIRMAN. No; I think it was testified he had an interest in that company also.

Mr. QUIN. What percentage does he own in the American Tobacco Co.?

Mr. BOWER. I have not any idea.

Mr. QUIN. Mr. Bower, you stated that Mr. Washburn was president of the cyanamid company at the time he made these statements before this committee.

Mr. BOWER. He was.

Mr. QUIN. And that statement was to the effect that for the Government to cooperate with them in the proposition that 3 per cent would be a fine thing.

Mr. BOWER. He called it proper Government cooperation.

Mr. QUIN. Is this proposition Mr. Ford has made this committee to be decided as improper under any construction of the language used by Mr. Washburn?

Mr. BOWER. I could not understand it so; no.

Mr. QUIN. It would be illogical to construe it in that way?

Mr. BOWER. Absolutely so. If it was a proper Government cooperation with them in 1916, they would have to admit it is proper Government cooperation now with Mr. Ford, and Mr. Ford is paying 1 per cent more interest than they offered.

Mr. QUIN. There is no doubt in your mind as a representative of the farmers as to the language used in this contract touching the fertilizer part of it, is there?

Mr. BOWER. No; there is no doubt in our minds. Some of our friends who feel they want to protect us a little further suggest we might get a little clarification of that language; not a change in the contract, but in order to make what we are absolutely confident is Mr. Ford's intention and purpose a little clearer in the contract, we are discussing with Mr. Ford's general representatives some possible clarification along that line, and I believe that will be adjusted satisfactorily to everyone.

Mr. QUIN. As a practical proposition, with different crops requiring different formulas, some as you stated needing more nitrogen than others, it would be a fatal mistake to set up in a contract what formulas ought to be used or made?

Mr. BOWER. Absolutely so. It would not be possible to do so.

Mr. QUIN. It would just ruin it so far as the farmers' interests are concerned.

Mr. BOWER. It might absolutely ruin it and it would not be possible. The 110,000 tons of ammonium nitrate is taken by us as a measure of the amount of production, not as a product, and it says so, as we read it, "taken at 110,000 tons of ammonium nitrate per annum," that is a measure, a yardstick on his production. That is the amount of nitrogen he will produce.

The CHAIRMAN. I think that has been testified to before the committee half a dozen times.

Mr. BOWER. I think so, Mr. Kahn.

Mr. QUIN. Mr. Bower, as a representative of the farmers of the country, could you consider the Alabama Power Co.'s proposition as compared with the Ford proposition?

Mr. BOWER. Not at all. From the farmer's standpoint there is no comparison.

Mr. QUIN. And the Ford proposition is satisfactory to them?

Mr. BOWER. Absolutely so.

Mr. QUIN. And as you have stated, he suggested the langauge that is carried in this contract of his own volition and made it acceptable to the farmers without consulting them.

Mr. BOWER. I think I stated that clearly. Section 15 is the one that refers to the farmers' organizations and Mr. Ford himself, without any suggestion from any farmers that I know of at all, suggested that a board of farmers sit in with him and, as we feel, help work this thing out. He says that we shall even go over his books and find out what his costs are. I think that is a clear indication of his intent, and is an indication of what he is going to do down there. You do not invite farmers to go over your books if you are going to put something over on them because there would be a howl go up at once.

The CHAIRMAN. If there are no further questions, we are very much obliged to you, Mr. Bower.

(The committee thereupon adjourned until Friday, February 24, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Friday, February 24, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. I want to inform the committee that Mr. Hugh L. Cooper has sent to me an analysis of his statement, as follows:

HUGH L. COOPER & Co.,
New York, February 21, 1922.

Hon. JULIUS KAHN,
Chairman Military Affairs Committee,
House of Representatives, Washington, D. C.

DEAR SIR: 1. Agreeable to the promise I made to the House Military Affairs Committee on Friday, February 17, I desire to submit the following analysis justifying the statement I made before the committee that the cost to the United States Treasury would be in reality $1,275,000,000 over and above the amount of money received from Mr. Ford should Mr. Ford's proposal be accepted as now before the committee.

2. The above figure of $1,275,000,000 was arrived at, as stated in my testimony, by compounding the 4 per cent interest charge annually. Since my return to my office I have ascertained that all money borrowed by the United States Government carries semiannual interest payments instead of annual interest payments. I have therefore recomputed this Treasury deficit on the basis that the money borrowed for Dams Nos. 2 and 3 will cost the Treasury 4 per cent (2 per cent payable semiannually).

3. In order that the committee may make a check of the figures quoted below by referring them to the Treasury Department or any other department for verification, I desire to set down the following bases that were used by me in arriving at the total result, and these bases are taken from the formal contract proposed by Mr. Ford and from the cost of construction and carrying charges as estimated by the Chief of Engineers.

4. DAM NO. 2.

Basis (A). That Mr. Ford's 4 per cent interest payments specified in paragraph 3 of his contract for Dam No. 2 will apply to $50,175,000 January 1, 1931. This $50,175,000 is arrived at as follows:

Cost to date of Dam No. 2	$17,000,000
Net accrued interest before full 4 per cent payments begin	8,175,000
Cost to complete Dam No. 2	25,000,000
Total	50,175,000

Above figures are Chief of Engineer's estimates.

Basis (B). That this 4 per cent interest (2 per cent payable semiannually) on $50,175,000 will run until January 1, 2025.

Basis (C). That beginning January 1, 1932, Mr. Ford will pay annually into the Treasury of the United States, account Dam No. 2, $1,000,000 (4 per cent annually on $25,000,000).

5. Using the above bases for calculation, I have assumed that the $50,175,000 principal as of January 1, 1931, and the interest thereon, thereafter compounded at the rate of 4 per cent (semiannual payments of 2 per cent) would be credited by the $1,000,000 annual payments made to the Government as and when they were made under the proposed contract. This method of crediting the payments direct to the account they are indebted to avoids the necessity of assuming that the Government would turn around and loan this money at 4 per cent.

6. The above four assumptions (A, B, C, and par. 5) make a total unpaid cost of Dam No. 2 at the end of the lease period, which is January 1, 2025, of $1,076,800,000.

7. DAM NO. 3.

Basis (A). Mr. Ford's 4 per cent interest payment specified in paragraph 7 of his contract for Dam No. 3 will apply to $33,000,000 January 1, 1931. This $33,000,000 is arrived at as follows:

Cost to build Dam No. 3	$25,000,000
Overflowed lands	2,331,000
Net accrued interest before full 4 per cent payments begin	5,669,000
Total	33,000,000

Above figures are Chief of Engineers' estimates.

Basis (B). That this 4 per cent interest (2 per cent payable semiannually) on $33,000,000 will run until January 1, 2028.

Basis (C). That beginning January 1, 1932, Mr. Ford will pay annually into the Treasury of the United States, account Dam No. 3, $1,000,000 (4 per cent annually on $25,000,000).

8. Using the above bases for calculations, I have assumed that the $33,000,000 principal as of January 1, 1931, and the interest thereon, thereafter compounded at the rate of 4 per cent (semiannual payments of 2 per cent), would be credited by the $1,000,000 annual payments made to the Government as and when they were made under the proposed contract.

9. The above four assumptions (A, B, C, and par. 8) make a total unpaid cost of Dam No. 3 at the end of the lease period, which is January 1, 2028, of $409,100,000.

10. The Treasury account against Dam No. 2 will show a deficit at the end of the lease period (see par. 6) of $1,076,800,000. With reference to Dam No. 3, the deficit will be $409,100,000, making a total Treasury deficit at the end of the lease period, after crediting all of Mr. Ford's payments as called for by paragraphs 3 and 7 (Mr. Ford's contract) of $1,485,900,000.

11. During the lease period, as per paragraph 10 of Mr. Ford's contract, there is to be in operation two amortization funds, as follows:

For Dam No. 2	$19,868
For Dam No. 3	3,505

both payments being paid every six months, beginning with specified dates. These two sums for the lease period, if invested at the rate of 4 per cent (2 per cent compounded semiannually) will return to the Treasury approximately $50,000,000.

12. The net total deficit that the Federal Government must supply by general taxation because of the failure of Mr. Ford's payments to foot the cost to the Treasury becomes $1,485,900,000 (par. 10) minus $50,000,000 (par. 11), or a net deficit in the Treasury of $1,435,900,000.

13. I believe that with the above data before you, you will be able to see—

(*a*) That the method of computing the cost to the Treasury is the correct and practical method, and tells accurately what the effect on the Treasury and the taxpayers in the United States will be.

(*b*) That you will find, if this question is investigated, the bases for calculation and the mathematics applied to the same are both correct.

14. This letter does not cancel the statement made before the committee that the deficit would be $1,275,000,000, which amount is correct for annual interest applied to the $83,175,000 principal. The figures herein submitted are based upon semiannual interest payment on the same $83,175,000.

Very truly, yours,

HUGH L. COOPER.

The CHAIRMAN. The chairman this morning received a number of telegrams from the mayors of Chattanooga, Nashville, Knoxville, and Memphis. They had read in the newspapers that there was a possibility of this committee going down to Muscle Shoals, so they have extended a very cordial invitation to the members of the committee to spend a day or two with everyone of them.

STATEMENT OF HON. S. HUBERT DENT, JR., ATTORNEY FOR THE ALABAMA POWER CO.

The CHAIRMAN. Gentlemen, Mr. Dent, former chairman of this committee, is present, and I understand he is here to represent the Alabama Power Co. in this matter.

Mr. DENT. Mr. Chairman, I represent the Alabama Power Co. as an attorney with reference simply to their legal rights in connection with this proposition. I do not represent the Alabama Power Co. or anybody else with reference to any policy that the committee may see fit to adopt. Mr. Thomas W. Martin, the president of the Alabama Power Co., is here and desires first to present the facts relative to the legal rights and other aspects of the Alabama Power Co.'s attitude in respect to Muscle Shoals this morning before we present the legal argument in the matter, and I would like for Mr. Martin to be heard with reference to the facts first.

The CHAIRMAN. As I understand it, the Acting Judge Advocate General made some recommendations regarding the legality of any agreement that the Alabama Power Co. has with the United States Government regarding the rights of the Alabama Power Co. in this plant.

Mr. DENT. Which is known as the Gorgas plant, near the Warrior River.

The CHAIRMAN. Yes.

Mr. DENT. Which is some 88 miles south of Muscle Shoals.

The CHAIRMAN. That is our understanding, and we would like to go into that.

Mr. DENT. I would like to go into that with you. I do not know what the program of the committee is. Since I was here about two weeks ago, the Alabama Power Co. has put in a bid for Muscle Shoals.

The CHAIRMAN. Yes.

Mr. DENT. I do not know what the disposition of the committee is as to hearing the power company on that proposition now or whether they would rather finish the hearing on the Ford proposition with reference to the rights of the Alabama Power Co. under that proposition.

The CHAIRMAN. We would prefer that you take up, first, the Ford proposition.

Mr. DENT. Then I will ask that Mr. Thomas W. Martin, the president of the Alabama Power Co., be heard with reference to the facts.

Mr. MILLER. Mr. Chairman, as I understand it, we are to hear now the Alabama Power Co. side of their contention regarding the Ford proposition?

The CHAIRMAN. Yes.

Mr. MILLER. And not their own proposition?

The CHAIRMAN. No; I thought it best to take up the Ford proposition first, and then they will take up their own proposition.

Mr. MILLER. I agree perfectly with the chairman.

STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO., BIRMINGHAM, ALA.

The CHAIRMAN. Mr. Martin, we will be very glad to hear what you have to say regarding this matter and you may proceed, for the present at least, in your own way and explain to the committee what your position is regarding the matter that was referred to by the Acting Judge Advocate General in his letter to the Secretary of War regarding the rights of your company. I will ask you first to state your name and the position you occupy.

Mr. MARTIN. My name is Thomas W. Martin; I live in Birmingham, Ala. I am president of the Alabama Power Co. I have been president of the company since February, 1920, succeeding Mr. James Mitchell, who had been stricken with paralysis and who died in 1920. Prior to that time I was vice president and general counsel of the company, and had been connected with the company as its counsel since 1912.

Mr. James Mitchell was the active executive of the company during its entire active history and until he was stricken with paralysis in 1920.

Some of the transactions of which I will speak were conducted by Mr. Mitchell. I knew of some of them from participation in them, and possibly to some extent, or to a larger extent, possibly, from contact with him; and in the affairs of our company I have been a director of the company since its active work began in 1912.

It is a rather difficult problem to know just where to confine myself in this discussion, and I hope, Mr. Chairman, if you think I am going beyond the strict limits of the question which you wish me to present, you will call my attention to it. I will try to confine myself to those limits. Necessarily, there are some incidents or statements which for the moment may seem as collateral or indirect, but which I believe are necessary to be presented to this committee.

The CHAIRMAN. Of course, the statement made by the Acting Judge Advocate General regarding this matter refers to the law of 1916, the national defense act, in a measure; and that act provided that the Government alone should erect this plant and should conduct it without any interference from any private corporation. You are familiar with that act, of course.

Mr. MARTIN. Yes; quite familiar, Mr. Chairman. The Alabama Power Co. was organized under the laws of Alabama in 1906 by citizens of that State. That company remained a nonoperating company for six years. Meanwhile, on March 4, 1907, the stockholders interested in it, citizens of that State, obtained an act of Congress approved March 4, 1907, to authorize the construction of a dam at the site selected for Lock No. 12 on the Coosa River. That was one of the sites which had been selected prior thereto by the engineers of the United States at which a dam should be built in a scheme of navigation improvement on that river.

Those gentlemen who were interested in the company, having obtained that act of Congress, undertook to find some one to take over the company and develop the property. There were others interested in Alabama in undeveloped water power projects, some connected with this same Alabama Power Co. group, others not connected with it. I shall not go into the relationships of those companies, because possibly that belongs to another branch of this investigation.

Mr. James Mitchell came into the situation in 1912; was invited into it by those people interested in the Alabama Power Co. and other companies. He formed a plan and took over this company with others, with a view to the developing of one or more hydroelectric stations.

This plan or these various properties, I might say, had been presented time and again to bankers and business men throughout this country and abroad for many years without any success. Mr. Mitchell was an engineer, an American citizen, who had never been in our State prior to 1911, and came there to look the situation over, and became interested in it, and undertook to find capital for the development of one or more properties.

A plan was formed to develop this Lock No. 12 property. The initial plan was to finance this property with English capital, and the program worked out pretty much as it was outlined in the beginning. Millions of dollars of capital were found abroad principally for this development.

The work of constructing the Lock 12, dam, and powerhouse was proceeded with and completed in the early part of 1914, but without a sufficient transmission system to market the power; and when the war began in Europe, in August, 1914, the company found itself with large indebtedness, with its securities held abroad in the ratio of possibly 65 or 70 per cent of all its securities held abroad. It was necessary to make an entirely new program. The company needed three times as much capital as it then had for transmission lines, stations, and for other purposes to market the power. As you gentlemen may know, it takes a great deal of money, after the power is developed, to bring it to market.

A new plan was formed. The English situation, represented by large investments, was subordinated to an entirely new financing program, and an arrangement was made in this country for further financing. It was carried through after long negotiations with the English bondholders and stockholders.

The new arrangement was arranged in the latter part of 1914 and the early part of 1915, since which time the company has been entirely financed in America to the extent of some $23,000,000; and in addition to that financing, as you gentlemen know who have investigated these questions, large volumes of securities in American enterprises have, as a result of the war and con-

ditions abroad, come to this country. The conditions of exchange and what not have caused that liquidation abroad of American securities, and so it has been with our enterprise, and to-day we find ourselves with almost a complete reversal of the conditions which prevailed in 1914; that is to say, we have approximately 35 or 40 per cent of our securities held abroad, the balance in America.

This Gorgas situation came about in this way: It was necessary to have a steam reserve plant to enable a company such as this to sell power. We could not develop further waterpowers because Congress had not passed the legislation, as you gentlemen know. None was passed from 1912 to 1920. We built the reserve steam plant at Gadsden and we then found it necessary to build a second reserve steam plant. In investigating the question of its location, spending months of time, we finally selected a site on the Warrior River, northwest of Birmingham about 30 miles, an undeveloped point at the confluence of Bakers Creek and the Warrior River. The nearest settlement was some 8 miles. The advantages were, coal mine at the point, water for condensing purposes——

The CHAIRMAN (interposing). What do you mean by "at the point?"

Mr. MARTIN. At the location of the plant. Water for condensing purposes, close proximity to Birmingham, and hence to our load centers.

We arranged then to purchase land at this location. It was difficult to do so. We were only able to purchase approximately 20 acres of land in fee simple on which to erect a station. We purchased other surface lands immediately surrounding and also an interest in a coal mine or land then undeveloped containing coal, with a view to its gradual development to enable us to generate and bring into our system steam power from time to time in such volume as necessary to supplement our water-power system.

Of course, it was necessary not only to locate this site but we had to build roads, clear it away, because it was in a state of nature. We had to develop it from the ground up, and in addition to that, to build transmission lines and other stations bringing the power to our main system at Birmingham. This was in the early part of 1916, as I recall, or some time in 1916.

We arranged the financing and the construction program to build this reserve station, and to build a series of lines carrying the power to Birmingham. There arose, incidentally, demands for power in this district from coal mines, from municipalities and gradually, as a part of the same program, we extended the lines from this station.

I have handed you gentlemen a map which shows this situation. At this station the land was purchased and the property was constructed by the Alabama Power Co., and the lines which run northwest from Bessemer were constructed in part during the period ending, we will say, January 1, 1918, when the question arises which is before this committee.

I would like to show the committee a large picture of this Warrior plant as it was constructed with its immediate buildings and surroundings on the 1st day of January, 1918, which our company owned then, before any work was done or even seriously contemplated by the United States Government. This [indicating] is a picture of the plant taken February 7, 1918.

Meanwhile, there were definite negotiations with the Government for the extension of this plant which led to this contract, but there was no work done in connection with the Government which appears in any way upon this picture. This picture represents the plant as completed at that time. Of course, it does not show the lines and stations and service which radiates from it, either back to Birmingham or otherwise.

Mr. DENT. It represents the plant as constructed by your company originally.

Mr. FIELDS. Just what part of the picture represents the plant?

Mr. MARTIN. Everything you see in this picture, Mr. Fields.

The CHAIRMAN. That was on February 7, 1918?

Mr. MARTIN. Yes; this picture was taken on February 7, 1918.

The CHAIRMAN. We were already in the war at that time.

Mr. MARTIN. Yes, sir; and we were arranging a plan with the Ordnance officers for the extension of this plant.

This [indicating] is a picture of the conditions one year before, when there was nothing there and all this site was in a state of nature, and this photograph [indicating] was taken one year later, and this is the plant that was constructed by the Alabama Power Co. as I have explained.

Now, so that you may get the relationships in your mind, this is a picture of the plant taken still one year later, showing the plant as extended under the arrangement made with the United States.

The CHAIRMAN. And that was taken in 1919?

Mr. MARTIN. Yes, sir; this picture was taken on January 14, 1919.

Now, why did this situation arise or why was this arrangement made with the United States?

You gentlemen may know that when it was determined to construct nitrate plants at Muscle Shoals, the idea was to use water power. There was no water power developed at Muscle Shoals. It was necessary to provide some other source of power temporarily pending the construction of the water power plant.

This steam plant of our company to which I am referring was located 88 or 90 miles away. We were approached, first, by Mr. Frank S. Washburn, who was interested in the cyanamid process. He asked us to take up with the officers of the Government, which we did——

The CHAIRMAN (interposing). Will you allow me to ask you just one question there. Is this the Mr. Washburn who was a stockholder in the cyanamid company?

Mr. MARTIN. That is the Mr. Washburn, Mr. Chairman.

The CHAIRMAN. He was also a stockholder in the Alabama Power Co.?

Mr. MARTIN. He was. He is not now.

The CHAIRMAN. But at the time when he asked you to negotiate with the United States officers, he was a member or interested in the Alabama Power Co.?

Mr. MARTIN. He was a stockholder. He was not otherwise connected with us. He was not a director or officer in our company. He had resigned from our board at that time. Mr. James Mitchell took the matter up with the officers of the Ordnance Department.

The CHAIRMAN. Do you know what officer of the Ordnance Department had spoken to Mr. Washburn and suggested that you get in communication with the Ordnance Bureau?

Mr. MARTIN. I have understood that Gen. Crozier was the officer.

The CHAIRMAN. Gen. Crozier at that time was the head of the Ordnance Bureau of the Government?

Mr. MARTIN. Yes, sir; he was Chief of Ordnance at that time. Mr. Mitchell came to Washington, and if I am correct, Mr. Washburn did not further have any connection with any of the negotiations in this matter. The entire discussions were between officers or employees of the power company and the direct representatives of the Government.

Mr. Mitchell came to Washington and discussed the matter with, possibly, Gen. Crozier, and I am sure he discussed it with Col. Joyes, who was the chief of the nitrates division. Those discussions lasted for some days with a view to finding some way of working out the program by which the Government could obtain power from our company for the temporary operation of nitrate plants. It was the idea at that time that the Government would construct a nitrate plant at Sheffield, and that within six months, approximately, the first unit or section of that plant would be completed, which would require some 30,000 kilowatts of power.

Time was of the essence of the arrangement. Our company had on its system a large load. Its capacity was taken up or its minimum capacity, at least, was taken up for a large part of the year with service to municipalities and similar service of that character, but principally by industrial uses. We had a large part of the power in the service of such companies as the Tennessee Coal, Iron & Railway Co., other mining companies, and other industrial companies which were essential, either directly or indirectly, to the prosecution of the war activities. Possibly 80 per cent of the power of our company was in industrial use.

The question was: What could we do? We explained the situation to Col. Joyes. We explained our position with regard to customers. This reserve plant was necessary to enable us to render complete service throughout the year. Of course, the Government had a right to take such power as it cared to take from our system, under the conditions which existed. It was a question of balancing up as to what should be done, whether to take the power from one use or allow it to remain in another use.

It was agreed, first of all, that we were in position to supply some power for part of the year for this purpose. The arrangement, before anything else was agreed upon, was that these officers said to us, "We will at least construct a transmission line connecting with your station and take from you such power as emergencies may require." We were asked whether we would agree to construct the line. We agreed to construct the line and to provide the right of

way, which we agreed to. We owned in fee simple a part of the right of way at that time, and we agreed to immediately purchase the balance of it and place it at the disposal of the Government.

We gave orders by telegraph to proceed with the laying out of a transmission line for the account of the Government. How it was to be paid for and under what conditions, no one knew. We just went to work completing the right of way. We appropriated our own money and went ahead to get the right of way and we got the right of way.

In due course a plan was worked out by which material would be obtained and this line constructed to Sheffield. Coincidently, or rather a little later in the negotiations, came this program for the construction of the Warrior extension because, obviously, we could not, without discontinuing service to others, supply 30,000 kilowatts of power to the Government, and the Government officials concluded that it was of public interest for us to maintain service to many of these large users of power. So there was nothing to do except to work out some arrangement by which a source of power could be created which would meet the emergency.

This plant, of course, the Government might have taken. It was under our general mortgage. We had made provisions in this plant for its enlargement. We had erected foundations and underwater structures, water intakes, planning the station for three units, as commercial conditions might require. They were important, very important, because the very work we had done, the very conditions which existed, meant at least six months of saving in time, in creating a supply of 30,000 kilowatts of power if it could be done by an extension of this station.

A great deal of the work at that time in formulating the plan and in its execution was carried on by Maj. R. D. Coombs, who was an engineer officer, who came into the service of the Government during this emergency, and was, as I understood, placed in charge of working out the details of this matter under Col. Joyes, and afterwards working out and supervising the entire construction program.

The CHAIRMAN. He was an emergency officer?

Mr. MARTIN. Yes, sir. He was an engineer officer, as I understand, who went into the service in the fall of 1917.

In this situation, our company having this land and having a plant, the question was what to do. It was explained and understood clearly by representatives of the Government and our company at that time that there was no law under which the United States could agree to sell that property, if created on our land, to the Alabama Power Co. That was understood and we recognized that to be the law, but what to do to protect the United States was the question. We had no legal power to sell a part of our plant station. It was a question which reached into our fundamental situation. Then the question was: What will we do, or what could we do, to protect the United States?

These gentlemen asked us: "If an arrangement is worked out by which an extension of your station is created and equipment placed there, will you agree to purchase at the conclusion of the emergency on the basis of fair value to the United States?" We agreed to do so. So that these gentlemen concluded that the Government would be protected in the situation, if we would agree, on the demand of the Government, to purchase the property at fair value and not at junk value. We agreed to it.

We agreed to purchase the property, and so the negotiations proceeded upon that theory, and that was our arrangement, the United States agreeing, or it being the plan to provide in the contract, that the United States would, if permitted by law, sell to us on our demand.

Thus the matter continued in this status. The Ordnance Department decided to proceed with the enlargement of this station, arranging with our company to undertake the work.

The contract is dated the 1st day of December, 1917; but, obviously, it was not executed then. It was executed long afterwards, as I will tell you.

Negotiations proceeded, Maj. Coombs conducting them in Alabama, Col. Joyes, and through his organization here. The lawyer in charge in behalf of the Government at Washington was Capt. Raymond Hull Noble, a lawyer who had entered the service and had been living in New York City, but who died in 1918.

The CHAIRMAN. Pardon me just a moment; the Army officer you refer to, Col. Joyes; was he a Regular Army officer or an emergency officer?

Mr. MARTIN. He is a regular officer of the Army.

The CHAIRMAN. He was a regular officer in the Army?

Mr. MARTIN. Yes; and is still in the service. He was chief of the division, and these gentlemen whose names I have mentioned, I understand, were in his department.

Capt. Noble was the law officer at first. He died later in the year, but before we had reached any agreement as to the details of the contract there were passed several acts of Congress which I want to call to your attention, because it was in the light of these acts of Congress that the form of the contract became different. In recognition of these acts of Congress Capt. Noble and myself, and we were interested, he on the side of the Government and I on behalf of the power company, principall, in owrking out the legal situation.

On May 10, 1918, an act was approved providing as follows:

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That during the existing emergency the President be, and he hereby is, authorized, in his discretion and upon such terms as he shall deem expedient, through the head of any executive department, to sell any supplies, materials, equipment, or other property heretofore or hereafter purchased, acquired, or manufactured by the United States in connection with, or incidental to the prosecution of the war, to any person, partnership, association, or corporation, or to any foreign State or Government engaged in war against any Government with which the United States is at war; and any moneys received by the United States as the proceeds of any such sale shall be covered into the Treasury of the United States and a full report of the same shall be forthwith submitted to Congress."

A further act was passed on this same subject approved July 9, 1918.

The CHAIRMAN. Do you know what that act was known as?

Mr. MARTIN. I do not, Mr. Chairman.

The CHAIRMAN. Did it have the name of the author attached to it?

Mr. MARTIN. I have not heard that it did.

Mr. DENT. I think, Mr. Chairman, although I am not sure, that it was a legislative provision attached to some appropriation bill. That is my recollection of the facts.

The CHAIRMAN. Well, that was done on a number of occasions during the war.

Mr. MARTIN. This appears to be an independent act.

Mr. DENT. I am not sure about that.

Mr. MARTIN. On July 9, 1918, an act was approved, and possibly this may have appeared in an appropriation bill:

"Sale of war supplies: That the President be, and he hereby is, authorized, through the head of any executive department, to sell, upon such terms as the head of such department shall deem expedient, to any person, partnership, association, corporation, or any other department of the Government, or to any foreign State or Government engaged in war against any Government with which the United States is at war, any war supplies, material, and equipment, and any by-products thereof, and any building, plant, or factory, acquired since April 6, 1917, including the lands upon which the plant or factory may be situated, for the production of such war supplies, matrials, and equipment which, during the present emergency, may have or may hereafter be purchased, acquired, or manufactured by the United States: *Provided further*, That sales of guns and ammunition made under the authority contained in this or any other act shall be limited to sales to other departments of the Government and to foreign States or Governments engaged in war against any Government with which the United States is at war and to members of the National Rifle Association and of other recognized associations organized in the United States for the encouragement of small-arms targt practice: *Provided further*, That a detailed report shall be made to Congress on the first day of each regular session of the sales of any war supplies, material, lands, factories, or buildings, and equipment made under the authority contained in this or any other act, except sales made to any foreign State or Government engaged in war against any Government with which the United States is at war, showing the character of the articles sold, to whom sold, the price received therefor, and the purpose for which sold: *Provided*, That any moneys received by the United States as the proceeds of any such sale shall be deposited to the credit of that appropriation out of which was paid the cost to the Government of the property thus sold, and the same shall immediately become available for the purposes named in the original appropriation: * * *"

The CHAIRMAN. How does that law affect the Alabama Power Co.?

Mr. MARTIN. For this reason, Mr. Chairman: This law came into the situation in this way. This law gave the authority from Congress to the executive

branch of the Government to sell this character of property, and Capt. Noble and those gentlemen in the nitrates division construed it to give authority for them to agree in behalf of the United States that the United States would sell this property to the Alabama Power Co. upon its request, the power company also agreeing to buy it on the request of the United States Government. It removed the uncertainty which up to that time had existed, namely, as to whether the Congress has conferred the power on executive officers to sell such property as this.

The CHAIRMAN. Let me ask you this question: Your company, the Alabama Power Co., insisted on the passage of that law before they were willing to negotiate?

Mr. MARTIN. No, sir; we never knew the law was passed until it was passed. We were constructing and this whole arrangement was in effect, and we had agreed to purchase on the demand of the United States. We had nothing to do with the passage of the act?

The CHAIRMAN. You did not know about the passage of the act, I understand you to say?

Mr. MARTIN. When the contract was signed, of course, we knew the law was in existence.

The CHAIRMAN. Have you thought what might have happened had you refused to do anything for the Government in accordance with the original law, the United States being at war at that time?

Mr. MARTIN. We did not refuse, Mr. Chairman, of course. We were going right ahead and doing whatever the gentlemen asked us to do. They asked us to do certain things, and we agreed to do them.

The CHAIRMAN. Did your officers have meetings at that time frequently, and your board of directors?

Mr. MARTIN. Yes; of course we had meetings, Mr. Chairman.

The CHAIRMAN. Anybody that refused to carry out the requests of the Government was in danger of being designated a pro-German, was he not?

Mr. MARTIN. Absolutely; and we carried out every request that was made of us, Mr. Chairman.

The CHAIRMAN. Did that fear have anything to do with your offers?

Mr. MARTIN. We were willing to do whatever we could, of course, and wanted to do whatever we could to aid the Government at the time. The emergency was of such a character that we all, as patriotic American citizens, wanted to do our duty, and we felt then and feel now that we did our duty. The question of the disposal of this property was a secondary consideration, Mr. Chairman.

The CHAIRMAN. Just continue your statement, Mr. Martin.

Mr. MARTIN. The Government officials felt it was fair to require us to purchase on the demand of the Government, and we agreed to it without any hesitation.

Mr. FIELDS. Mr. Chairman, did Mr. Martin give the date of each one of those acts?

The CHAIRMAN. I think he stated the dates, but in order to make doubly sure I will ask him again. What was the date of the acts you refer to?

Mr. DENT. May 10, 1918, was the first one, and July 9, 1918, the last one.

Mr. PARKER. As to the last act, I wish you would read over the words about war equipment and supplies and so on. I did not get that exactly.

The CHAIRMAN. Will you kindly read that again, Mr. Martin?

Mr. MARTIN. "That the President be, and he hereby is, authorized——

Mr. PARKER. I do not refer to that part, but the part with reference to selling certain classes of property.

Mr. MARTIN. "Any war supplies, material, and equipment, and any by-products thereof, and any building, plant, or factory acquired since April 6, 1917."

Mr. PARKER. And then it goes on and refers to manufactured products.

Mr. MARTIN. "For the production of such war supplies, materials, and equipment which, during the present emergency, may have been, or may hereafter be, purchased, acquired, or manufactured by the United States."

Now, prior to this time, Mr. Chairman, and before these acts were passed, we had constructed this transmission line from our system to Sheffield, in the remarkably short time of five months, and the line was in operation before there was any additional power supply at Warrior. I do not know whether you understood me exactly. I was just saying that before any of these acts were passed the transmission line was constructed in five months and was in operation in the early part of May, and the Government was in position to obtain all the power it saw fit before any of these acts were passed.

The CHAIRMAN. Let me ask you these questions in order that I may get the matter perfectly clear in my own mind: You made this first agreement with the Government, as I recall, in December, 1917?

Mr. MARTIN. It was more verbal than otherwise. There was no contract.

The CHAIRMAN. It was enough of a contract to put your people at work?

Mr. MARTIN. Yes, sir; it was.

The CHAIRMAN. And that was in December, 1917, during the first year of the war?

Mr. MARTIN. Yes, sir.

The CHAIRMAN. Now, this last act, which you said was passed on July 9, 1918——

Mr. MARTIN. Yes, sir; that is correct.

The CHAIRMAN. Did you finally sign another agreement in 1918?

Mr. MARTIN. We did, Mr. Chairman; not another agreement, Mr. Chairman. We signed a single agreement covering the whole subject on the day of the false report of the armistice, in November, 1918. It was signed by both parties on that day at the city of New York, in the office of the Alabama Power Co., where the meeting was held to close the arrangements.

I have here a certified copy of the minutes of the board of directors of our company held on November 4, 1918, approving of the contract and authorizing it be to executed.

The CHAIRMAN. At that time this last law which you read had been passed by Congress and signed by the President.

Mr. MARTIN. Yes, sir.

The CHAIRMAN. And the new arrangement which you agreed to and which I assume was signed by the respective parties carried in it this new law.

Mr. MARTIN. Yes; there was no——

The CHAIRMAN (interposing). I believe, on the first day of the hearing, we put into the record the full contract that you entered into with the Government.

Mr. MARTIN. Yes; sir; there was not but one contract, Mr. Chairman, and that one is dated December 1, 1917, and was executed on November 9, 1918. It is known as contract T–69. In the meantime, the work had been largely completed.

The CHAIRMAN. Have you ever put into the record or have we in the record the original contract that you entered into?

Mr. MARTIN. There was no other contract we entered into.

The CHAIRMAN. I mean the original agreement of December 1, 1917.

Mr. MARTIN. It was merely a letter, Mr. Chairman, directing us to proceed.

The CHAIRMAN. Did it go into details?

Mr. MARTIN. No, sir.

The CHAIRMAN. Could you put that letter into the record?

Mr. MARTIN. I will be very glad to.

The CHAIRMAN. We will be very glad to have it.

Mr. MARTIN. We were directed to proceed with the construction of the transmission line and to make plans for the extension of this station, the terms and conditions, including compensation, to be thereafter agreed upon.

Mr. DENT. Mr. Chairman, I think that is a very important point you are bringing out, and when you get through, will you allow me to ask Mr. Martin some questions right along that line, right here, because I think it is quite important, if you are through with your questions?

The CHAIRMAN. Go ahead.

Mr. DENT. Mr. Martin, is it not a fact that from December 1, 1917, up to date of the execution of the contract on November 9, 1918, you were acting under verbal instructions of the War Department and you had no written contract at all with the Government?

Mr. MARTIN. We had no written contract. We were merely acting under letters directing us to proceed.

Mr. DENT. And verbal directions.

Mr. MARTIN. Supplemented by verbal directions from time to time.

Mr. DENT. And the only contract that was executed between the Government and your company was the contract that was dated December 1, 1917, but actually executed November 9, 1918?

Mr. MARTIN. That is correct, Mr. Chairman.

After Capt. Noble died, Mr. Chairman, the work on the legal side of the contract was taken up by Lieut. Col. William Williams, a lawyer then in the service, who had been practising law in New York City. I did not know him and none of us knew him prior to the time he took up this subject.

The CHAIRMAN. He was an emergency officer, as I recall.

Mr. MARTIN. Yes, sir; he was a lawyer, and I remember something about him because he told me he had been practicing law in New York since 1884, and was then practicing law in New York City. He conducted the legal negotiations to a conclusion.

The CHAIRMAN. Do you know with what firm he was connected before he came into the Army?

Mr. MARTIN. I do not know, Mr. Chairman. I visited his office a few days ago when this controversy came up. I had not seen him since the execution of the contract. I called him on the phone in New York and asked him his recollection of the time of the execution of the contract.

The CHAIRMAN. Yes.

Mr. MARTIN. He explained he could not discuss it with me because he was leaving in 30 minutes to take a steamer for Japan. However, he did agree for me to come around and spend a few minutes with him. I went to his office with another director of the company.

The CHAIRMAN. Where was his office at that time?

Mr. MARTIN. It was either 15 or 25 Broad Street. I went to his office and talked to him, and he recollected the details, as I did, in connection with the execution of the contract. He said to me he did not care to make any written statement at the moment, but he would be very glad to come before the committee if the committee cared to hear him. But he left that day, as he told me, on a trip of several months. That is all I know about the situation as far as Col. Williams is concerned. There was one other officer of the Government engaged with Col. Williams and Col. Joyes in working out the contract, and that was Col. C. F. Beames.

The CHAIRMAN. Was he an emergency officer?

Mr. MARTIN. Yes, sir; he was an emergency Engineer officer. He is not in the service now; he lives in New York.

The CHAIRMAN. Do you know where he lives in New York, or what his address is?

Mr. MARTIN. He is connected with a firm at No. 62 Cedar Street, the firm of A. B. Leach & Co.

The CHAIRMAN. Mr. Dent, do you desire to ask Mr. Martin any more questions?

Mr. DENT. No; that is all. I just wanted to bring out the fact that we only had one written contract.

The CHAIRMAN. If you will kindly continue, Mr. Martin, we will be glad to hear you.

Mr. MARTIN. I think it might be worth while to refer to a certain bulletin which followed the passage of these two acts of Congress and which was dated August 3, 1918, bearing upon the question of this character of a contract. This bulletin was issued by Gen. Goethals, Assistant Chief of Staff, and it says:

"Where increased manufacturing facilities are constructed at the expense of the Government or where their cost is amortized in the price paid by the Government the contract shall provide that title to such facilities shall vest in the United States. The contractor may agree to take such facilities at a fair value in diminution of the profit which he otherwise would make.

"Where title to increased manufacturing facilities vests in the United States, the contract shall provide that the contractor may make written offer to the Government to purchase such facilities, whereupon, if the Government accepts such offer, the contractor shall become obligated to pay for such facilities at their appraised value at that time. The contract shall further provide that if the contractor does not make or the Government does not accept such offer the Government shall have the right to remove such facilities after the termination of the contract within a time reasonably sufficient to effect such removal. The contract may provide that the Government shall have an option at the termination of the contract to purchase at an appraised value the land on which such facilities are erected.

"If, in case of such increased manufacturing facilities, it is desired to make a contract along lines different from those herein established, the approval of the superior board of review shall first be secured.

"By authority of the Secretary of War:

"GEO. W. GOETHALS,
"*Major General, Assistant Chief of Staff,*
"*Director of Purchase, Storage, and Traffic.*"

The CHAIRMAN. What was the date of that?

Mr. MARTIN. That was dated August 3, 1918. I merely mention that for such bearing as it may have on the situation.

Bearing in mind certain features of the contract, you may recall that the contract recites, in its opening, that, "Whereas the contractor owns and operates an electric generating and transmitting and distributing system in the State of Alabama, which includes in general (1) a hydroelectric plant on the Coosa River, with an installed capacity of 67,500 K. V. A.; (2) a transmission network (including a 110,000-volt system) connecting the aforesaid plant with various other plants and substations; (3) a steam-reserve generating plant, hereinafter referred to as the Warrior station, situated on the Black Warrior River at the junction of said river with Bakers Creek, Walkr County, and having an installed capacity of 25,000 K. V. A.; (4) certain rights of way extending approximately 20 miles from said Warrior station toward Sheffield, Ala., and available for the consumption thereon of a portion of the transmission line hereinafter referred to; and

"Whereas the contractor represents that it now owns and controls at said Warrior station things and facilities which will be useful in connection with the installation, construction, and operation of the Warrior extension and Warrior substation hereinafter referred to, including (*a*) adequate circulating water intake and discharge facilities, with gates, screens, canals, and tunnels; (*b*) partially constructed building and apparatus foundations; (*c*) camps, roads, tracks, and docks; (*d*) plans and specifications; (*e*) a staff for engineering, construction, and operation; (*f*) ash-handling facilities and ash-dumping spaces; and (*g*) other facilities in existence at or about said station at the commencement of work under this contract which will be useful in the maintenance and operation of said Warrior extension as a point for the generation of electric energy."

That was recited in substance as the situation that existed at this station. And the contract provided then, first, that we should erect additional tie lines between this Warrior station and our system with a view that the Government should be able at all times not only to take the capacity of this extension and this Warrior station, but that it should be able to take 30,000 additional kilowatts out of our main system. We undertook to construct this additional tie line, which we did at a cost of some $300,000. That was our own money and the Government had nothing to do with it. That was one of the obligations we undertook.

Then it was provided that we should construct an extension of this station on our own lands according to Government specifications, and to this transmission line on our own right of way.

The CHAIRMAN. With whom did you agree to do that, or with what officer?

Mr. MARTIN. This was the contract with the United States, and Col. William Williams executed it in behalf of the United States.

Then there was a provision, quite important, that upon the construction of the property we would undertake to operate and maintain the extension as a part of our system and supply from our system at least 30,000 kilowatts of power; not only maintain the property at our own expense but keep it in first-class order and then insure it in behalf of the United States, which we have performed all the while. We also agreed in that contract that the United States should from that time forward have a superior right to take power from our system over any other contract which we might thereafter make, so long as this contract was in existence—that is, any additional power.

There are various features of the contract which all go to show that the Government undertook to take such amount of power as it might need or desire from our system, and we undertook from our system, supplemented by the Warrior extension, to supply the power. It was never throughout any of the negotiations suggested that section 124 of the national defense act had anything to do with this question. Nothing was ever discussed in reference to section 124 of the national defense act. From first to last it proceeded as an arrangement by which we would supplement our facilities to enable us to supply power to the Government, and to protect the Government in that situation, that we were to agree to purchase the property at a fair value, not a junk value—and the property to-day has a fair value. Of course, it has a fair value, and when the time comes and the Government wants us to purchase the property we stand ready and willing and able to purchase at its fair value, in pursuance of the terms of this contract. We have never said we would purchase it

at a junk value and are not saying so to-day. It would be unfair for us to do so.

Now, this station, gentlemen, erected as it is, forms an integral part of our system. We have a coal mine there serving this plant. We have ash-dumping space, we have all those facilities common to one plant. We also have a single water intake.

It has been mentioned here that there is a large plant known as the Windsor plant in Ohio, where there are two distinct ownerships, and that was cited as evidence that such a plant as this can be divided in ownership. But I know the Windsor situation. There are two ownerships there, but there is a contract between both of those companies. They have organized an operating company, a single operating company to operate that entire station as one, delivering to each company such amounts of power as their respective needs may require. That is an arrangement which could not be worked out except through a single operation, each contributing in proportion to the power it takes and to the operating expense of the station. But our situation is such that there can not be two operating stations. The Government officials tried it out during the war, but I am sure they do not think it can be done now, that is, those gentlemen who know the facts.

When it came to this question of the national defense act Secretary Baker made the statement before the Graham committee that nitrate plant No. 2 was not built under the national defense act. It also appeared in that investigation that the Warrior extension was not built under that act. We have in the record a copy of President Wilson's directions, dated February 23, 1918, authorizing $13,385,000 of the fund appropriated by section 124 to be used on what is now the Wilson Dam and powerhouse. Maj. Burns has testified that the balance of that fund had previously been spent on other projects, or is now in hand. Gen. Williams testified that nitrate plant No. 2 was erected from the appropriations for fortifications, and also that the extension at the Gorgas plant was erected from that source, and not one cent of the $20,000,000 appropriated under the national defense act was spent on the Gorgas plant or the transmission line. These two elements represented a large sum, $67,000,000, many times in excess of the $20,000,000 appropriation. Of course, the plants provided for under this act were not the plants provided for here, because the President did not designate Gorgas in his letter at any time; there was no reference to it at all. When the President discharged the duties imposed upon him by that act he selected property other than the Warrior extension, and never said the plant selected by him under that act should be treated as the nitrate property.

On that basis of the case, considering its entire history, we feel that we have all along complied with every request, verbal or written, of the Government. We have stood ready at all times to place our entire system at the disposal of the Government. We have made a contract in good faith with Government officials and we stand ready to carry it out.

The CHAIRMAN. Is that as far as you care to go at the present time, Mr. Martin?

Mr. MARTIN. I would be glad to answer any questions you wish to ask me.

Something was said about our own investment in connection with this extension. If the committee would care to know about that I would be glad to tell you what we spent in connection with this matter.

Our investment and expenses amounted to $1,016,515.61 in connection with the station. I shall be glad to read the items in detail if you desire me to do so.

The CHAIRMAN. We will be glad to hear the statement. That is in connection with the Government's request regarding the transmission of power from the line at Gorgas to nitrate plant No. 2?

Mr. MARTIN. Yes; and those investments and expenses related to the Gorgas project. We had a number of obligations which we took on in connection with it from time to time.

The CHAIRMAN. Will you kindly read the statement you refer to?

Mr. MARTIN. We agreed in article 1 of the contract to construct what is known as a tie line with a certain capacity, and which also involved the duty of constructing a substation of sufficient capacity at Bessemer to enable the power to be passed from our system into this line. Those transmission lines from Warrior to Bessemer and additional substation facilities at the Bessemer substation, inclusive of additional rights of way purchased by the Muscle Shoals-Warrior transmission lines, cost us $330,720. We agreed to stand part of the cost of constructing what is known as the Drifton Railroad. The Government advanced $30,000 toward that construction, and our company advanced $103,962.27 in addition to that.

Then we had certain expenses, consisting of engineering, excavation, and construction, chargeable to the second unit, placed or purchased for the second unit, which was occupied by the Government facilities, representing an investment on our part of $212,627.50.

When this plant was created, or just before the plant was put into service, we purchased additional coal from many sources to operate this additional unit. As we had to place the coal in storage, the storage facilities were inadequate. This is not a very large item, but we had a fire which burned $17,100 worth of coal, the fire being caused by spontaneous combustion. We were under an expense of $17,222 for the cost of handling coal in storage made necessary by the cessation of Government activities and the lack of coal-handling facilities. Then there was additional labor cost at the Warrior plant due to the compulsory operation under the 8-hour law, and that amounted to $12,799.75. We had a coal mine that we equipped to supply coal for the entire output of this station, and we increased the facilities from a capacity of 350 tons a day up to approximately 800 tons a day. The equipment we put in there represented an investment of $224,736.79.

Then we had some expenses of this character: We had on order, for instance, when the Government came into the situation, a 20,000-kilowatt unit to occupy this second space in our power house. We canceled the order at the request of the Government, and we had certain losses with the manufacturers to meet for the turbine and for the condensers. We paid the General Electric Co. approximately $10,000 to rewind the turbine to meet the needs of another purchaser. We had to take the condenser which we now have on the ground at a cost of $42,744.86. Then we had some expense for completing the installation of the Government equipment at the Warrior plant after the Government had stopped all payments in connection with that work. Those items altogether make a total of $1,016,515.61.

We do not claim anything for those things; we merely mention those to show our out-of-pocket and investment expenses in connection with this work. Of course, our system there represented at that time property values of approximately $35,000,000, and that entire system with all this generating capacity and facilities were connected through this tie line and station with this Warrior plant. I am reminded by one of my associates that there were a supplemental contract to contract T-69, which I will place in the record, if the committee wishes, making certain changes in certain provisions. It was negotiated in 1919, which, in its recitals, in effect, reaffirmed this contract that is now before the committee. I will be glad to place same in the record.

(The contract referred to is as follows:)

THE UNITED STATES OF AMERICA AND THE ALABAMA POWER CO., BIRMINGHAM, ALA.—SUPPLEMENTARY CONTRACT T-69 A FOR COMPLETION OF CONSTRUCTION FEATURES RELATING TO ORIGINAL CONTRACT T-69. DATED AUGUST 1, 1919.

This contract made this 1st day of August, 1919, between the Alabama Power Co., a corporation organized and existing under the laws of the State of Alabama (hereinafter called the contractor) party of the first part, and the United States of America, by R. H. Hawkins, lieutenant colonel, Ordnance Department, United States Army, acting as contracting officer by authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, party of the second part, witnesseth:

(*a*) Whereas a certain contract was entered into between the United States and the contractor, No. T-69, dated December 1, 1917, a copy of which contract is hereto attached and made a part hereof, marked "Exhibit A" (hereinafter called "original contract") which term also includes, wherever used herein, all agreements or orders, if any, supplementary to said contract, except this agreement; and

(*b*) Whereas the original contract provided that the contractor should at the expense of the United States prepare and submit to the contracting officer general plans and specifications for approval and upon such approval, construct certain facilities for the benefit and account of the United States, generally known as the "Warrior Extension," "Warrior Substation," "Warrior-Muscle Shoals Transmission Line," "Muscle Shoals Substation," and an extension to the Ensley-Southern Branch of the Southern Railway, known as the "Drifton Extension Railroad," which facilities are described in greater detail in Schedules A, B, C, D, and E, which form part of the original contract No. T-69; and

at a junk value and are not saying so to-day. It would be unfair for us to do so.

Now, this station, gentlemen, erected as it is, forms an integral part of our system. We have a coal mine there serving this plant. We have ash-dumping space, we have all those facilities common to one plant. We also have a single water intake.

It has been mentioned here that there is a large plant known as the Windsor plant in Ohio, where there are two distinct ownerships, and that was cited as evidence that such a plant as this can be divided in ownership. But I know the Windsor situation. There are two ownerships there, but there is a contract between both of those companies. They have organized an operating company, a single operating company to operate that entire station as one, delivering to each company such amounts of power as their respective needs may require. That is an arrangement which could not be worked out except through a single operation, each contributing in proportion to the power it takes and to the operating expense of the station. But our situation is such that there can not be two operating stations. The Government officials tried it out during the war, but I am sure they do not think it can be done now, that is, those gentlemen who know the facts.

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Our investment and expenses amounted to $1,016,515.61 in connection with the station. I shall be glad to read the items in detail if you desire me to do so.

The CHAIRMAN. We will be glad to hear the statement. That is in connection with the Government's request regarding the transmission of power from the line at Gorgas to nitrate plant No. 2?

Mr. MARTIN. Yes; and those investments and expenses related to the Gorgas project. We had a number of obligations which we took on in connection with it from time to time.

The CHAIRMAN. Will you kindly read the statement you refer to?

Mr. MARTIN. We agreed in article 1 of the contract to construct what is known as a tie line with a certain capacity, and which also involved the duty of constructing a substation of sufficient capacity at Bessemer to enable the power to be passed from our system into this line. Those transmission lines from Warrior to Bessemer and additional substation facilities at the Bessemer substation, inclusive of additional rights of way purchased by the Muscle Shoals-Warrior transmission lines, cost us $330,720. We agreed to stand part of the cost of constructing what is known as the Drifton Railroad. The Government

advanced $30,000 toward that construction, and our company advanced $103,962.27 in addition to that.

Then we had certain expenses, consisting of engineering, excavation, and construction, chargeable to the second unit, placed or purchased for the second unit, which was occupied by the Government facilities, representing an investment on our part of $212,627.50.

When this plant was created, or just before the plant was put into service, we purchased additional coal from many sources to operate this additional unit. As we had to place the coal in storage, the storage facilities were inadequate. This is not a very large item, but we had a fire which burned $17,100 worth of coal, the fire being caused by spontaneous combustion. We were under an expense of $17,222 for the cost of handling coal in storage made necessary by the cessation of Government activities and the lack of coal-handling facilities. Then there was additional labor cost at the Warrior plant due to the compulsory operation under the 8-hour law, and that amounted to $12,799.75. We had a coal mine that we equipped to supply coal for the entire output of this station, and we increased the facilities from a capacity of 350 tons a day up to approximately 800 tons a day. The equipment we put in there represented an investment of $224,736.79.

Then we had some expenses of this character: We had on order, for instance, when the Government came into the situation, a 20,000-kilowatt unit to occupy this second space in our power house. We canceled the order at the request of the Government, and we had certain losses with the manufacturers to meet for the turbine and for the condensers. We paid the General Electric Co. approximately $10,000 to rewind the turbine to meet the needs of another purchaser. We had to take the condenser which we now have on the ground at a cost of $42,744.86. Then we had some expense for completing the installation of the Government equipment at the Warrior plant after the Government had stopped all payments in connection with that work. Those items altogether make a total of $1,016,515.61.

We do not claim anything for those things; we merely mention those to show our out-of-pocket and investment expenses in connection with this work. Of course, our system there represented at that time property values of approximately $35,000,000, and that entire system with all this generating capacity and facilities were connected through this tie line and station with this Warrior plant. I am reminded by one of my associates that there were a supplemental contract to contract T–69, which I will place in the record, if the committee wishes, making certain changes in certain provisions. It was negotiated in 1919, which, in its recitals, in effect, reaffirmed this contract that is now before the committee. I will be glad to place same in the record.

(The contract referred to is as follows:)

THE UNITED STATES OF AMERICA AND THE ALABAMA POWER CO., BIRMINGHAM, ALA.—SUPPLEMENTARY CONTRACT T–69 A FOR COMPLETION OF CONSTRUCTION FEATURES RELATING TO ORIGINAL CONTRACT T–69. DATED AUGUST 1, 1919.

This contract made this 1st day of August, 1919, between the Alabama Power Co., a corporation organized and existing under the laws of the State of Alabama (hereinafter called the contractor) party of the first part, and the United States of America, by R. H. Hawkins, lieutenant colonel, Ordnance Department, United States Army, acting as contracting officer by authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, party of the second part, witnesseth:

(*a*) Whereas a certain contract was entered into between the United States and the contractor, No. T–69, dated December 1, 1917, a copy of which contract is hereto attached and made a part hereof, marked "Exhibit A" (hereinafter called "original contract") which term also includes, wherever used herein, all agreements or orders, if any, supplementary to said contract, except this agreement; and

(*b*) Whereas the original contract provided that the contractor should at the expense of the United States prepare and submit to the contracting officer general plans and specifications for approval and upon such approval, construct certain facilities for the benefit and account of the United States, generally known as the "Warrior Extension," "Warrior Substation," "Warrior-Muscle Shoals Transmission Line," "Muscle Shoals Substation," and an extension to the Ensley-Southern Branch of the Southern Railway, known as the "Drifton Extension Railroad," which facilities are described in greater detail in Schedules A, B, C, D, and E, which form part of the original contract No. T–69; and

(c) Whereas the United States did on April 15, 1919, direct the suspension of further construction work on account of the original contract, and as a result, the contractor has been unable to complete certain minor details of construction called for and shown on plans properly approved by the representative of the contracting officer, under the terms of that contract, the remaining details being essential to the satisfactory operation of the facilities provided by the United States but not of sufficient importance to warrant the expense for further maintenance by the United States of a staff of inspectors, clerical and other help to supervise their execution as was necessary in the public interest during the active construction period; and

(d) Whereas the contractor has a regularly organized staff of operating engineers, mechanics, and workmen established at its Warrior generating station, capable of carrying out the completion of such minor construction items as remain, and with a view toward economy and the satisfactory termination of the construction program, it is the desire of the United States and the contractor that the operating staff of the contractor, guided by the contractor's technical staff, carry out such work; and

(e) Whereas it is the desire of the United States and the contractor to maintain in full force and effect the conditions and covenants embodied in the original contract T–69, and to only modify the conditions of the said original contract in respect to the methods of executing the minor construction works and tests, covered by this supplementary contract and of making payment for such work.

Now, therefore, in consideration of the mutual agreements herein contained. the said parties have agreed, and by these presents do agree, with each other as follows:

ARTICLE I.

GENERAL.

The contractor shall, at its own expense, furnish all necessary engineering talent, drawings, skilled and common labor, likewise all materials and supplies not now available at the storehouse of the United States at Gorgas, and will complete the items listed in the following schedule of unfinished items of construction in a thoroughly workmanlike manner (and to the complete satisfaction of the contracting officer, or his duly authorized representative). The United States shall furnish without cost to the contractor such materials and supplies, purchased by the United States for use in connection with this contract and/or now in its storehouse at Gorgas, Ala., as may be necessary for the completion of the work scheduled and described in Article II hereof.

ARTICLE II.

SCHEDULE.

The following is a schedule of items of construction which the contractor, under the terms of this contract, agrees to carry out:

Power house (the following items required to complete):

1. Install Louvres at end of main monitors over conveyors (material on hand); labor $25
2. Provide stop logs for west entrance to ash pit (material on hand); labor 50
3. Double rivet each vertical seam of corrugated galvanized iron on temporary ends of boiler-house and turbine-room sections of building (rivets on hand); labor 100
4. Place flashing around 42 and 16 inch exhaust (material on hand); labor 10
5. Grout around pipe holes in floor of No. 3 boiler room; material, $4; labor, $36 40
6. Install floor drains in No. 3 boiler room; material, $4; labor, $16 20
7. Install glass in door of 13,000-volt switch room (glass on hand); labor 10
8. Install locks on doors of monitors; material, $5; common labor, $5 10
9. One additional coat of paint on boiler room No. 3, whitewash ash rooms; 2 coats of paint on condenser room; 2 coats of paint on all floors; all window sash to be drawn; material, $1,000; labor, $445 1,445
10. Fit and bolt down manhole covers on air ducts (material on hand); labor 50

Smoke flues and stack:

11. Install check valves between flues and ash sump (material on hand); labor $20
12. Furnish and place one cover for damper frame; material, $5; labor, $5 10

Coal-handling tracks:

13. Install standard-gauge track scales (scales and material for scales on hand); cement powder, etc., $100; labor, $1,400 1,500
14. Adjust cross-over dumps and resurface tracks; labor 200

Coal crushers and conveyors:

15. Provide side aprons for screens in crusher pits to prevent coal from sifting into pit (material on hand); labor 100
16. Put one coat of paint on conveyor sheds (material on hand); labor 300

Boilers:

17. Put plastic fire clay around superheaters on boilers Nos. 7, 8. and 9 (clay on hand); labor 150
18. Install plates on sides of all boilers between fronts and building columns (plates on hand); labor 150

Stokers:

19. Repair broken governor on No. 16 stoker; labor 10

Steam and exhaust lines:

20. Furnish and install one Davis automatic valve for No. 14 boiler; labor 20
21. Reinstall by-pass valve on 20-inch and 2 valves on 16-inch when valves are replaced by the Chapman Co.; labor 25
22. Connect steam and exhaust piping on No. 16 stoker (pipe on hand); labor 25
23. Repair stay bolts in big steam separator; labor 25
24. Connect steam and exhaust piping to fans in No. 3 ash pit; 2 4-inch steel ells, $25; labor, $25 50
25. Install steam and exhaust line drains in boiler rooms (8 ¾-inch check valves have been shipped); labor 50
26. Install crossties on 4 main steam lines over boilers (material on hand); labor 200

Feed-water lines:

27. Replace Ross expansion joints on No. 3 unit with pipe; labor 100
28. Furnish and install one 4-inch globe valve on boiler No. 15; valve, $25; labor, $25 50
29. Furnish and install 1 new handwheel on 4-inch globe valve on No. 13 boiler; handwheel, $2; labor, $3 5

Feed-water pumps.

30. Install new shaft in steam-driven pump in No. 2 unit when shaft supplied without cost to contractor by manufacturers; labor 50
31. Replace coupling pins in motor-driven pump in No. 3 boiler room; labor 5
32. Install new operating cylinders and adjust Copes regulators on the steam-driven pumps (cylinders being shipped); labor 25

Air compressor:

33. Install motor on foundation and bolt to compressor (motor on order); labor 50
34. Install air lines to turbine room and condenser pit; pipe, $100; labor, $50 150

Pipe covering:

35. Furnish and install additional pipe covering omitted from the Armstrong Cork & Insulating Co.'s contract 3,000
36. Turbine to be painted (paint on hand); labor 100
37. Furnish superintendence, labor, fuel, and miscellaneous supplies necessary for the final test of the 30,000-kilowatt General Electric steam-turbo generator and auxiliaries upon the reerection of the turbo-generator and auxiliaries by the General Electric Co. (lubricants on hand) 2,500

Boiler and turbine room instruments:

38. Pipe up boiler steam-flow meters on boilers 8, 9, 13, 14, 15, 16, 17, and 18; 2 on each boiler; pipe up draft gauges on boilers 8, 9, 13, 14, 15, 16, 17, and 18; pipe up steam gauges on instrument boards of boilers 9, 13, 14, 15, 16, 17, and 18; install, with piping complete, Venturi meters on individual boilers, except No. 12 boiler; pipe up recording pressure gauge for live steam to turbine; pipe up CO^2 recorders for No. 1 and No. 2 stacks; pipe up pressure gauges for feed-water pumps in No. 3 boiler room; pipe up Venturi meter recorder for boiler feed in No. 3 boiler room; erect and pipe up recording thermometer for heater inlet and outlet in No. 3 boiler room; erect and pipe up recording thermometer for live steam to turbine; furnish and install, with piping complete, the manometer tubes for boilers 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, and 18; 10 manometer tubes, $950; 3,000 feet of ¾ and ½ inch pipe, $500 ..... $1,450
39. Install signal system system in boiler room and engine room, equipment on hand 400

Oil filters:

40. Install two small filters for oil from auxiliaries (filters on hand); pipe, $500; labor, $350 850

Sump pumps:

41. Install 2 sump pumps in condenser pit (on hand) .....
42. Install 1 sump pump in ash pit (on hand) ..... } 450
43. Install 2 sump pumps in coal crushers (on hand) .....

Electrical installation:

44. Give 1 coat of paint to 110 K. V. switches (paint on hand); labor 25
45. Install choke coils on Sheffield line switch No. 1114 (coils on hand); labor 25
46. Install signal system for generator; material, $250; labor, $100 350
47. Replace single strain insulators on No. 3 bank, 110 K. V. transformers, by double strain insulators (material on hand); labor 50
48. Install corona shields on 110 K. V. air-brake switches (material on hand); labor 125
49. Install three cables to No. 3 bank, 110 K. V. transformers (cable on order); labor 50
50. Erect new bushings on spare transformers (one 110 K. V. bushing to be repaired, four 12 K. V. bushings on order); labor 50
51. Install sheet-iron covers on both exciter switch panels (material on hand); labor 25
52. Connect up air compressor motor (material on hand); labor 25
53. Connect up 5 sump pump motors (material on hand); labor 125
54. Wire turbine trip switch to gauge board; labor 10
55. Replace 3 current transformers and connect up potential transformers at the same time (transformers and material on hand); labor 25
56. Lay concrete floor in tunnel; material, $25; labor, $25 50
57. Complete drainage of 110 K. V. switchyard; labor 250
58. Fill oil tanks and return empty oil barrels; labor 25

20 semipermanent houses:

59. Build 500 feet of 6-inch sewer (pipe on hand); labor 100
60. Paint the outside of 4 houses (paint on hand); labor 80

12 permanent houses:

61. Complete the inside of painting of house No. 5 25
62. Complete the outside painting and do all of the inside painting on house No. 6 (paint on hand); labor 100
63. Lay floors in house No. 8; give 2 coats of paint inside, 1 coat of paint outside; erect hot-water tank (material on hand); labor 250
64. Screen all of the 12 permanent houses (material on hand); labor 200

Niles crane:

65. Repair niles crane, installing 2 new sheaves; sheaves ordered, $10; labor, $20 30
66. Repair automatic stop for crane; labor 25

Cleaning up:

67. Cleaning up property, dismantling temporary structures and buildings; collect and store all salvaged material at places at Gorgas satisfactory to the contracting officer or his authorized representative, making a complete list of all such materials; this does not include crating, dismantling, and packing machinery and equipment and does not include storing or moving salvaged materials after same have been placed or stored at said location once designated by contracting officer $1,500

Total amount 17,300

ARTICLE III.

PAYMENT.

(*a*) For and in consideration of the contractor's acceptance of the accomplishment of the above 67 items, and upon receipt of a certificate from the contractor that the Alabama Power Co. accepts the above 67 items as accomplished, and the "Warrior Extension," "Warrior Substation," "Warrior-Muscle Shoals Transmission Line," and the "Muscle Shoals Substation" as complete and ready for use in the performance of contract T–69, the United States of America shall pay to the contractor the sum of $17,300.

(*b*) In reference to item 37 of the schedule contained in Article II hereof, it is agreed that for the specified sum of $2,500 the contractor will furnish superintendence, labor, fuel, lubricants, and miscellaneous supplies, necessary for the final test of the 30,000 kilowatt General Electric steam turbogenerator and auxiliaries, and will conduct such test; it being understood, however, that should conditions beyond the control of the Alabama Power Co. require that additional test or tests be made in connection with the 30,000 kilowatt steam turbogenerator included under item No. 37 above, and involving an expense in excess of the sum of $2,500 as agreed upon for that item, the Alabama Power Co. will not be obliged to make same, but the contracting officer may request that same be done at the further expense of the United States.

(*c*) The contractor shall not be liable for accident or damages arising from or occurring during the test of the said 30,000 kilowatt steam turbogenerator and auxiliaries included under said item No. 37 of said schedule or for any modification of the same as they are set up in said original contract.

ARTICLE IV.

This contract is made in pursuance of a certain proposal made by the Alabama Power Co. to Col. J. W. Joyes, dated May 24, 1919, and an acceptance thereof by Col. Joyes dated May 24, 1919, copies of which are attached hereto marked "Exhibit B" and made a part hereof, and the rights of the parties under this contract shall be defined by such proposal and acceptance unless otherwise specifically provided herein.

The United States shall not be released from any obligation or responsibility on commitments made as provided for in said original contract, on or before April 15, 1919.

The United States shall not be relieved of any responsibility to the contractor resulting from the performance of the work covered by said original contract nor does the contractor release or waive any claims not heretofore allowed under said original contract.

This contract, including the proposal and acceptance above referred to, does not change, alter, or amend the terms, conditions and obligations contained in the original contract except as herein specifically set out.

In witness whereof, the parties hereto have caused this contract to be executed in sextuplicate on the day and year first above written, at Washington, D. C., by their officers thereunto duly authorized.

UNITED STATES OF AMERICA,
By R. H. HAWKINS,
Lieutenant Colonel, Ordnance Department,
United States Army, Contracting Officer.

Witness:
GENEVIEVE STROHL.

ALABAMA POWER CO.,
By W. N. WALMSLEY,
Its General Manager, Contractor.

Attest:
WALTER M. HOOD, *Secretary.*
(United States of America Seal.)
(Alabama Power Co. Seal.)

92900—22——42

STATE OF ALABAMA, *Jefferson County.*

I, Walter M. Hood, secretary of Alabama Power Co., do hereby certify that the following resolution was unanimously adopted by the board of directors of said company at its regular meeting held at the office of the company in the Brown-Marx Building, in the city of Birmingham, Ala., on March 9, 1919, a quorum of the board being present:

"*Resolved*, That hereafter the signatures of two persons, officers or employees of the company, shall be affixed to checks and acceptances, and that the board hereby authorizes to sign such checks and acceptances the president, the vice president, the general manager, the assistant to the president, or the assistant general manager, and the treasurer, the assistant treasurer, or the auditor; and for bills, receipts, and indorsements for deposit, the president, vice president, general manager, treasurer, assistant treasurer, or auditor; and for notes, leases, contracts, and documents, the president, vice president, or general manager, and the secretary or assistant secretary."

And I further certify that the following officers of the company were elected at said meeting for the ensuing term and until their successors are elected and qualified: James Mitchell, president; Thomas W. Martin, vice president; Walter M. Hood, secretary; H. S. Swan, treasurer; H. S. Swan, assistant secretary; M. P. Randall, assistant secretary; and M. P. Randall, assistant treasurer.

And I do further certify that Mr. W. N. Walmsley was heretofore on, to wit, July 1, 1916, duly appointed general manager of the company by the president, and that he is now acting in such capacity.

Given under my hand and the seal of said company at its office in the city of Birmingham, Ala., on this the 11th day of September, 1919.

WALTER M. HOOD,
Secretary Alabama Power Co.

EXHIBIT A.

(Inserted at this place is copy of the contract, dated December 1, 1917, between Alabama Power Co. and the United States of America, and known as contract T–69, which contract has heretofore been placed in the record of these hearings at page 146, et seq.)

EXHIBIT B.

ALABAMA POWER CO.

Washington, D. C., May 24, 1919.

Col. J. W. JOYES,
Chief Nitrate Division Ordnance Department,
United States Army, Washington, D. C.

Subject: Contract T–69.

SIR: The certain items of work remaining to be done under contract T–69, and as shown on the accompanying schedule, Alabama Power Co., will complete for its account upon the payment to it of $17,500 by the United States.

Such material and supplies belonging to the United States, purchased for use in connection with this contract, which may be necessary for the completion of the above-mentioned work, will be available to Alabama Power Co. free of charge.

The above sum includes the cost of testing of the Warrior extension, estimated at $2,500. Should conditions beyond the control of Alabama Power Co. require that an additional test or tests be made, then Alabama Power Co. will not be obligated to make same, but the contracting officer may request that same be done at the expense of the United States.

The completion of the items shown on the attached schedule will, in our judgment, fulfill the conditions and intent of the construction program covered by contract T–69 as instructed by you February 19, 1919 (T–108453).

It is the understanding that no further work under this contract is to be done at the expense of the United States unless same may be specifically ordered by the contracting officer, and, consequently, upon the completion of the work herein mentioned, the construction features of contract T–69 will be considered to be finished.

It is not intended that the payment to Alabama Power Co. of the $17,500 above referred to will commit Alabama Power Co. to responsibility for commitments or obligations incurred by the United States in connection with this contract, or for any claims which may arise thereunder.

ALABAMA POWER CO.,
By W. N. WALMSLEY, *General Manager.*

I certify that the above is a true copy of the original.

C. F. BEAMES,
Lieutenant Colonel, Ordnance Department United States Army.

MAY 24, 1919.

From: J. W. Joyes, colonel, Ordnance Department, United States Army, contracting officer.

To: Alabama Power Co.

Subject: Contract T–69 dated December 1, 1917: Acceptance of proposal of May 24, 1919, for certain work; notice of termination of period of preliminary operation, article 14; notice of suspension of demand, article 21.

1. With mutual consent and agreement on your part and on that of the contracting officer, and because of actual unreadiness of the turbogenerator pertaining to the Warrior extension, the Chief of Ordnance has deemed that the Warrior extension (and therefore "the Warrior extension, the Warrior substation, and the transmission line") was (and were) not, on December 1, 1918, and is (and are) not, at this date, "complete and ready for use in the performance of this contract."

2. Your proposal in your letter of May 24, 1919, to complete the several minor items of work now unfinished and the testing of the Warrior extension still needed for the sum of $17,500 is accepted as submitted. This understanding will be confirmed by a contract (supplemental) providing for payment of that sum—$17,500—by the United States upon your certificate that you accept the items as accomplished and the Warrior extension as complete and ready for use in the performance of this contract not later than July 31, 1919.

3. The Chief of Ordnance now deems that, for the purposes of the definition in article 14, and of the provisions thereof, the Warrior extension, the Warrior substation, and the transmission line will be complete and ready for use in the performance of this contract on the 31st day of July, 1919, and therefore sets that date as the definite date of termination of the period of preliminary operation defined in article 14 of the contract.

4. As this date is set in advance, your written acceptance thereof is requested in order that for mutual convenience there may be no future misunderstanding or doubt.

5. Furthermore, the United States, by me, the undersigned contracting officer, hereby serves upon you this written notice as contemplated and provided for by article 21 that the United States does hereby suspend as of July 31, 1919, its demand for energy provided for by said article 21, and that having allowed the full 60 days' notice (and more) the United States does from and after said 31st day of July, 1919, and during the period of such suspension as provided, stand relieved of its obligation to make the minimum monthly payment of $30,000 and the contractor does, correspondingly and during the same period, stand relieved of the payments mentioned in subdivision (1) of article 17.

6. For certainty of mutual understanding your written acceptance of this notice and of such effect thereof under article 21 is requested.

J. W. JOYES,
Colonel, Ordnance Department, United States Army,
Contracting Officer.

Mr. Dent calls attention to one other act which I wish to mention. There was passed by Congress an act which was approved on March 2, 1919, entitled "An act to provide relief in the cases of contracts connected with the prosecution of the war, and for other purposes," which reads as follows:

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That the Secretary of War be, and

he is hereby, authorized to adjust, pay, or discharge any agreement, express or implied, upon a fair and equitable basis that has been entered into, in good faith during the present emergency and prior to November 12, 1918, by any officer or agent acting under his authority, direction, or instruction, or that of the President, with any person, firm, or corporation for the acquisition of lands, or the use thereof, or for damages resulting from notice by the Government of its intention to acquire or use said lands, or for the production, manufacture, sale, acquisition or control of equipment, materials or supplies, or for services, or for facilities, or other purposes connected with the prosecution of the war, when such agreement has been performed in whole or in part, or expenditures have been made or obligations incurred upon the faith of the same by any such person, firm, or corporation prior to November 12, 1918, and such agreement has not been executed in the manner prescribed by law: *Provided*, That in no case shall any award, either by the Secretary of War or the Court of Claims, include the prospective or possible profits on any part of the contract beyond the goods and supplies delivered to and accepted by the United States and a reasonable remuneration for expenditures and obligations or liabilities necessarily incurred in performing or preparing to perform said contract or order: *Provided futher*, That this act shall not authorize payment to be made of any claim not presented before June 30, 1919: *And provided further*, That the Secretary of War shall report to Congress at the beginning of its next session following June 30, 1919, a detailed statement showing the nature, terms, and conditions of every such agreement and the payment or adjustment thereof: *And provided further*, That no settlement of any claim arising under any such agreement shall bar the United States Government through any of its duly authorized agencies, or any committee of Congress hereafter duly appointed, from the right of review of such settlement, nor the right of recovery of any money paid by the Government to any party under any settlement entered into, or payment made under the provisions of this act, if the Government has been defrauded, and the right of recovery in all such cases shall exist against the executors, administrators, heirs, successors, and assigns of any party or parties: *And provided further*, That nothing in this act shall be construed to relieve any officer or agent of the United States from criminal prosecution under the provisions of any statute of the United States for any fraud or criminal conduct: *And provided further*, That this act shall in no way relieve or excuse any officer or his agent from such criminal prosecution because of any irregularity or illegality in the manner of the execution of such agrement: *And provided further*, That in all proceedings hereunder witnesses may be compelled to attend, appear, and testify, and produce books, papers, and letters, or other documents; and the claim that any such testimony or evidence may tend to criminate the person giving the same shall not excuse such witness from testifying, but such evidence or testimony shall not be used against such person in the trial of any criminal proceeding.

"SEC. 2. That the Court of Claims is hereby given jurisdiction on petition of any individual, firm, company, or corporation referred to in section 1 hereof, to find and award fair and just compensation in the cases specified in said section in the event that such individual, firm, company, or corporation shall not be willing to accept the adjustment, payment, or compensation offered by the Secretary of War as hereinbefore provided, or in the event that the Secretary of War shall fail or refuse to offer a satisfactory adjustment, payment, or compensation as provided for in said section.

"SEC. 3. That the Secretary of War, through such agency as he may designate or establish, is empowered, upon such terms as he or it may determine to be in the interest of the United States, to make equitable and fair adjustments and agreements, upon the termination or in settlement or readjustment of agreements or arrangements entered into with any foreign Government or Governments or nationals thereof prior to November 12, 1918, for the furnishing to the American Expeditionary Forces, or otherwise for war purposes, of supplies, materials, facilities, services, or the use of property, or for the furnishing thereof by the United States to any foreign Government or Governments, whether or not such agreements or arrangements have been entered into in accordance with applicable statutory provisions; and the other provisions of this act shall not be applicable to such adjustments.

"SEC. 4. That whenever under the provisions of this act the Secretary of War shall make an award to any prime contractor with respect to any portion of his contract which he shall have sublet to any other person, firm, or corporation who has in good faith made expenditures, incurred obligations, rendered service, or furnished material, equipment, or supplies to such prime contractor, with the knowledge and approval of any agent of the Secretary of War duly authorized thereunto, before payment of said award to Secretary of War shall require such prime contractor to present satisfactory evidence of having paid said subcontractor or of the consent of said subcontractor to look for his compensation to said prime contractor only; and in the case of the failure of said prime contractor to present such evidence or such consent, the Secretary of War shall pay directly to said subcontractor the amount found to be due under said award; and in case of the insolvency of any prime contractor, the subcontractor of said prime contractor shall have a lien upon the funds arising from said award prior and superior to the lien of any general creditor of said prime contractor.

"SEC. 5. That the Secretary of the Interior be, and he hereby is, authorized to adjust, liquidate, and pay such net losses as have been suffered by any person, firm, or corporation by reason of producing or preparing to produce either manganese, chrome, pirites, or tungsten in compliance with the request or demand of the Department of the Interior, the War Industries Board, the War Trade Board, the Shipping Board, or the Emergency Fleet Corporation to supply the urgent needs of the Nation in the prosecution of the war; said minerals to be enumerated in the act of Congress approved October 5, 1918, entitled 'An act to provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of those ores, metals, and minerals which have formerly been largely imported, or of which there is or may be an inadequate supply.'

"The said Secretary shall make such adjustments and payments in each case as he shall determine to be just and equitable; that the decision of said Secretary shall be conclusive and final, subject to the limitation hereinafter provided; that all payments and expenses incurred by said Secretary, including personal services, traveling and subsistence expenses, supplies, postage, printing, and all other expenses incident to the proper prosecution of this work, both in the District of Columbia and elsewhere, as the Secretary of the Interior may deem essential and proper, shall be paid from the funds appropriated by the said act of October 5, 1918, and that said funds and appropriations shall continue to be available for said purpose until such time as the said Secretary shall have fully exercised the authority herein granted and performed and completed the duties hereby provided and imposed: *Provided, however*, That the payments and disbursements made under the provisions of this section for and in connection with the payments and settlements of the claims herein described, and the said expenses and administration shall in no event exceed the sum of $8,500,000: *And provided further*, That said Secretary shall consider, approve, and dispose of only such claims as shall be made hereunder and filed with the Department of the Interior within three months from and after the approval of this act: *And provided further*, That no claim shall be allowed or paid by said Secretary unless it shall appear to the satisfaction of the said Secretary that the expenditures so made or obligations so incurred by the claimant were made in good faith for or upon property which contained either manganese, chrome, pyrites, or tungsten in sufficient quantities to be of commercial importance: *And provided further*, That no claim shall be paid unless it shall appear to the satisfaction of said Secretary that moneys were invested or obligations were incurred subsequent to April 6, 1917, and prior to November 12, 1918, in a legitimate attempt to produce either manganese, chrome, pyrites, or tungsten for the needs of the Nation for the prosecution of the war, and that no profits of any kind shall be included in the allowance of any of said claims, and that no investment for merely speculative purposes shall be recognized in any manner by said Secretary: *And provided further*, That the settlement of any claim arising under the provisions of this section shall not bar the United States Government, through any of its duly authorized agencies, or any committee of Congress hereafter duly appointed, from the right of review of such settlement, nor the right to recover any money paid by the Government to any party under and by virtue of the provisions of this section, if the Government has been defrauded, and the right of recovery in all such cases shall extend to the executors, administrators, heirs, and assigns of any party.

"That a report of all operations under this section, including receipts and disbursements, shall be made to Congress on or before the first Monday in December of each year.

"That nothing in this section shall be construed to confer jurisdiction upon any court to entertain a suit against the United States: *Provided further*, That in determining the net losses of any claimant the Secretary of the Interior shall, among other things, take into consideration and charge to the claimant the then market value of any ores or minerals on hand belonging to the claimant, and also the salvage or usable value of any machinery or other appliances which may be claimed was purchased to equip said mine for the purpose of complying with the request or demand of the agencies of the Government above mentioned in the manner aforesaid."

The CHAIRMAN. That is the so-called Dent Act?

Mr. MARTIN. Yes.

The CHAIRMAN. I think we can put that into the hearings. Have you filed any claims under that law?

Mr. MARTIN. No, sir.

Mr. DENT. It was not necessary to file any claims because they had no money demand against the Government.

The CHAIRMAN. Of course that act, as I recall it, was passed in order to validate those claims that had been entered into informally and not in accordance with the strict letter of the law.

Mr. MARTIN. Yes.

The CHAIRMAN. You had no such claims.

Mr. MARTIN. If there was any informality in the execution of the contract—and I am not aware of it—this law would reach the question.

The CHAIRMAN. Then it may not be necessary to put that in the hearings?

Mr. DENT. I do not know that it is necessary to put it into the hearings, but a reference to it may be necessary because I expect to use it in what I have to say to the committee.

The CHAIRMAN. Very well. Is there anything else, Mr. Martin?

Mr. MARTIN. I will be very glad to answer any questions the committee may desire to ask me.

Mr. MCKENZIE. Mr. Martin, in order that I may get a picture of this whole thing firmly fixed in my mind, I want to ask you a few questions. As I understand your testimony your company in the fall of 1917, was operating a plant known as the Gorgas plant, on the Warrior River in Alabama, and selling your product to the people living in the surrounding towns and villages, and going on about your business practically unmindful of the fact that we were at war? Is that true?

Mr. MARTIN. No; I do not put it that way. Of course, we all knew we were at war, because every plant we had was affected and this Warrior plant was affected, and 80 per cent of our entire output was supplied to plants in the Birmingham district and other parts of our State engaged in the manufacture of war material.

Mr. MCKENZIE. Up to that time, as I understood you, Mr. Martin, you had not entered into any negotiations with the Government, or made any tender of the services of your plant to enable the Government to better prosecute the war?

Mr. MARTIN. The question did not come up until November, 1917. The question was where the nitrate plant might be located, and it only came up in November, 1917.

Mr. MCKENZIE. I am just trying to get this picture of the situation down there. So far as your corporation was concerned, you had not made any tender and had not entered into negotiations with the Government to assist in the prosecution of the war, so far as this particular plant was concerned?

Mr. MARTIN. We had notified Col. Joyes that that plant was there and at his service.

Mr. MCKENZIE. Did Col. Joyes reply to that?

Mr. MARTIN. In several conversations we did discuss it, and we acquainted him with the situation. Of course, we told Col. Joyes that the plant was there and we would be glad to do anything he cared to have us do about it.

Mr. MCKENZIE. You stated along about that time, however, Mr. Washburn came to see you, or came to see the officers of your company, and suggested that the plant might be enlarged, or something to that effect.

Mr. MARTIN. I think he just telephoned Mr. Mitchell, the president, to take up the matter with Gen. Crozier, and that is the way it came up.

Mr. MCKENZIE. At that time Mr. Washburn was a stockholder in the Alabama Power Co., was he not?

Mr. MARTIN. He was a stockholder.

Mr. MCKENZIE. What other position did he hold in connection with any other company or corporation?

Mr. MARTIN. Connected with us?

Mr. MCKENZIE. Any other corporation or company.

Mr. MARTIN. I do not know that—he was president of the American Cyanamid Co., but he was not connected with us in any other way.

Mr. MCKENZIE. But he was a stockholder in your company.

Mr. MARTIN. Yes.

Mr. MCKENZIE. At the same time he was president of the American Cyanamid Co.

Mr. MARTIN. Yes.

Mr. MCKENZIE. And the American Cyanamid Co., as has been testified to here, controlled the patent under which the fixation of nitrogen of the air is carried on.

Mr. MARTIN. I only know what the record states. I have no comments to make on that, because I only know what is in the record.

Mr. MCKENZIE. Some years back, of which you perhaps have some knowledge, Mr. Washburn and those connected with him at that time, in 1916, and prior to that time had endeavored to get the Government to begin the construction of certain plants at Muscle Shoals for the purpose of manufacturing nitrate, or adopting a system of the fixation of nitrogen from the air; is that true?

Mr. MARTIN. I only have heard it mentioned here; I had no connection with it.

Mr. MCKENZIE. You have no knowledge of it. In December, I think you said it was, you had your first consultation with the representative of the Government in connection with this matter, and the representative with whom you talked was a Mr. Williams?

Mr. MARTIN. No, sir; Col. Joyes, representing the Ordnance Department.

Mr. MCKENZIE. Representing the Ordnance Department?

Mr. MARTIN. Yes.

Mr. MCKENZIE. From that conversation you entered into a sort of verbal agreement as to what you were to do down on the Warrior River in connection with the Muscle Shoals proposition. Had the work begun at Muscle Shoals at that time?

Mr. MARTIN. I am sure I do not know, Mr. McKenzie.

Mr. MCKENZIE. You are not sure tbout it?

Mr. MARTIN. I do not know.

Mr. MCKENZIE. Do you know what company contracted with the Government for the construction of a plant by the Government for the manufacture of nitrates?

Mr. MARTIN. The contractors?

Mr. MCKENZIE. Yes.

Mr. MARTIN. I think it was the J. G. White Co. It is my recollection that they were the contractors.

Mr. MCKENZIE. I mean the contractor that undertook the construction of the plant. Was it the Air Nitrates Corporation?

Mr. MARTIN. I have heard that testimony here.

Mr. MCKENZIE. Do you know whether or not that is a subsidiary of the American Cyanamid Co.?

Mr. MARTIN. I only know what has been testified to here.

Mr. MCKENZIE. You do not know that as a fact?

Mr. MARTIN. No, sir; I do not.

Mr. MCKENZIE. Up to that time there had not been any work performed on Muscle Shoals on that proposition.

Mr. MARTIN. I can neither say yes or no, because I do not recall anything about it.

Mr. MCKENZIE. There was no activity at Muscle Shoals at that time, as I understand it, and immediately after your company, or the representatives of your company, had this conversation with the representative of the War Department you proceeded to buy the right of way, as I understand it, for the transmission line from the Gorgas plant to Muscle Shoals.

Mr. MARTIN. No; we had the right of way, and for about one-third of the distance we had service lines on it, serving other districts, and on the suggestion of Col. Joyes, or at his request, we had to purchase the remainder of the right of way.

Mr. MCKENZIE. You proceeded to purchase the right of way up to Muscle Shoals?

Mr. MARTIN. Yes.

Mr. McKENZIE. That was prior to the commencement of the construction work at Muscle Shoals, was it not?

Mr. MARTIN. I do not know.

Mr. McKENZIE. You are not sure about it?

Mr. MARTIN. No, sir; I am not sure about it.

Mr. McKENZIE. Did you purchase that right of way with the funds of the Alabama Power Co., or with money furnished by the Government?

Mr. MARTIN. With the funds of the Alabama Power Co.

Mr. McKENZIE. You own that in fee?

Mr. MARTIN. We own the easement in fee; we do not have a fee title.

Mr. McKENZIE. The right of way?

Mr. MARTIN. The right of way.

Mr. McKENZIE. And over that right of way you proceeded to construct the transmission line from your Gorgas plant to Muscle Shoals, and did construct it.

Mr. MARTIN. Yes, sir; and it was in operation for a distance of 88 miles within five months, long before there were any Warrior extension, and we were supplying power over it within five months for the use of the Government.

Mr. McKENZIE. Was that done to help out the Government?

Mr. MARTIN. That is what we did it for.

Mr. McKENZIE. Was your purpose to help out the Government, or having in mind the sale of power?

Mr. MARTIN. Well, we did it because the Government requested us to do it. The question of the sale of power—the primary question was that the Government wanted the power.

Mr. McKENZIE. Let us keep this in mind. Mr. Washburn came to see you, and after Mr. Washburn came to see you you had this interview with the representatives of the Government and they requested you to build this transmission line from the Gorgas plant, on the Warrior, up to Muscle Shoals, alleging that it was necessary to aid the Government in carrying on the war.

Mr. MARTIN. I would not say alleging; I can only speak of the way those gentlemen treated it.

Mr. McKENZIE. I do not want to put the matter in a false light.

Mr. MARTIN. Col. Joyes said his plan was to construct a nitrate plant and to have the first unit or division of it in operation in six months, and our system furnished the only available means of getting power for the operation of the unit in that time.

Mr. McKENZIE. Going back a little, Mr. Martin, when you constructed the original plant on the Warrior River at Gorgas, you laid the foundation for a 3-unit plant, as I understood you?

Mr. MARTIN. Yes.

Mr. McKENZIE. And with one water intake. You only completed one unit of it in the beginning?

Mr. MARTIN. Yes.

Mr. McKENZIE. And at that time you only had one unit completed from which you were selling power?

Mr. MARTIN. That was only a reserve at that time. Our principal station at that time, Mr. McKenzie, was the water-power plant at Lock No. 12, in the Coosa River. This Warrior plant was the reserve station for our system.

Mr. McKENZIE. Looking to the future, you had laid the foundation for a 3-unit plant?

Mr. MARTIN. Yes, sir.

Mr. McKENZIE. I am not criticizing that as a business proposition. Then you entered into this contract with the Government?

Mr. MARTIN. After we had ordered our second unit, in the latter part of 1917. At that time we had plans made for installing a second unit of our own, which we did not complete.

Mr. McKENZIE. You had not undertaken it up to that time?

Mr. MARTIN. No.

Mr. McKENZIE. Then you went into this arrangement with the Government, and under that contract the Government was to pay for the construction of this plant with the transmission lines?

Mr. MARTIN. Of this section of the plant; yes.

Mr. McKENZIE. Did you undertake the building of that—that is, your company?

Mr. MARTIN. Yes.

Mr. McKENZIE. Did you have a cost-plus contract with the Government?

Mr. MARTIN. Cost plus a fixed fee; yes.

Mr. McKENZIE. How much did your company receive as a fee for constructing that?

Mr. MARTIN. It is stated in the contract.

Mr. McKENZIE. I wish you would put that in the record.

Mr. MARTIN. It was $225,000 plus $60,000, a total of $285,000.

Mr. McKENZIE. Now, then, did the representatives of the Government at that time understand you were building this plant as an addition to your own plant, or as a separate unit?

Mr. MARTIN. As an extension.

Mr. McKENZIE. Then, as a matter of fact, you simply dovetailed onto the property you then owned and operated at Gorgas another addition paid for with Government money, and on which you got a fee for the construction?

Mr. MARTIN. We extended our plant, that was the effect of it; made an extension of it for the purpose of supplying the Government with the power from our system.

Mr. McKENZIE. The Government paid all the bills and you simply constructed it.

Mr. MARTIN. Yes.

Mr. McKENZIE. Was that sort of a plant the suggestion of the Government officials or was it your suggestion that it be done in that way?

Mr. MARTIN. I do not recall that. The main point was this: The question arose first of whether the Government could advance the funds in any way to us to enable us to make the extension. We found it was impracticable, upon application to the War Credits Board, to make an advance of those funds, and the question of credits on all kinds of propositions such as ours was a very serious one. The granting of credits on such propositions was seriously curtailed and the Government had absorbed all the credits at that time, so the question was how we could finance this extension. That was the question.

Mr. McKENZIE. It is true, is it not, Mr. Martin, that the Government could have constructed a steam plant at Muscle Shoals at the same time and had it at no greater cost than for constructing this one?

Mr. MARTIN. Mr. McKenzie, coincidentally the Government began the construction of a steam plant at Muscle Shoals, and completed that steam plant in the year 1919, long after the war was over, and they did it with the utmost speed. But they had to start from the ground up, and the Government had power six, seven, or eight months before the steam plant was constructed at Sheffield.

Mr. McKENZIE. Before the nitrate plant was completed, too?

Mr. MARTIN. Yes; we had our line ready and waiting. The Government began to use it in June or July.

Mr. McKENZIE. As a matter of fact, you had your plant all completed and ready for operation before the Government had any use for it at all.

Mr. MARTIN. Yes; they had begun to use our power—the line was ready on May 15, and the Government began to use the power about the 1st of June for construction purposes, and for operating purposes some time in August.

Mr. McKENZIE. Now, Mr. Martin, I want to ask you, as a business man, are you a lawyer?

Mr. MARTIN. Yes; I am a lawyer.

Mr. McKENZIE. And as a lawyer if it is not your judgment that with this particular addition hooked onto your plant in the manner in which it was hooked on and constructed that you practically shut out any other purchaser than the Alabama Power Co.?

Mr. MARTIN. You ask me my judgment?

Mr. McKENZIE. Yes; as a practical proposition.

Mr. MARTIN. As a practical question, yes. There could not be two operations at that plant in the very nature of things; it is not adapted for two operations.

Mr. McKENZIE. But in order to be doubly secure in protecting yourself—and I do not censure you for that—you entered into an agreement whereby you tried to tie the hands of the Government with a proposed option, giving you the option to buy the plant. Is not that true?

Mr. MARTIN. Mr. McKenzie, we agreed to buy on the demand of the Government at a fair value. It never occurred to us that the day would come when this Government would want to take away our station and destroy our property

there in order to give it to some one else, and it was never contemplated that the Government would do otherwise than realize a fair value out of what it had erected.

Mr. McKENZIE. Mr. Martin, you have stated that your company was anxious to serve the Government, and that that was your purpose in the matter, unmindful of any selfish interests. Did you have a reciprocal provision in your contract that you would sell to the Government at a fair value?

Mr. MARTIN. The land?

Mr. McKENZIE. The plant. Did you have a reciprocal proposition that the Government could buy your property in case they did not desire to sell to your company?

Mr. MARTIN. No; in the first place we had a general mortgage on it and we could not agree to sell it.

Mr. McKENZIE. You could sell it subject to the mortgage, could you not?

Mr. MARTIN. I do not suppose that there would be a very good title to a piece of property with a $10,000,000 mortgage on it.

Mr. McKENZIE. You could have sold your equity, could you not?

Mr. MARTIN. We could not do it.

Mr. McKENZIE. At any rate, you did not.

Mr. MARTIN. We did not.

Mr. McKENZIE. But the provision was in there that if the Government ever desired to sell this property the Alabama Power Co. should be the purchaser.

Mr. MARTIN. Would buy at a fair value.

Mr. McKENZIE. And had the preference.

Mr. MARTIN. I think, very naturally, being on our land, and its being a part of our system, as a basis on which we were performing public service.

Mr. McKENZIE. Being a lawyer, you understand that the law of this country has been in time of peace that the War Department, represented by Col. Joyes, who happened to be our representative, apparently, in many of these contracts, and who seemed to feel that he had authority to do as he pleased with Government property—in peace times the War Department can not sell real estate belonging to the Government without an act of Congress giving them authority. You were aware of that, were you not?

Mr. MARTIN. I was aware of that.

Mr. McKENZIE. Then all your contention is based on the war-time legislation in the act you have read in our hearing here this morning?

Mr. MARTIN. Our contention?

Mr. McKENZIE. Your contention that the contract is legal is not founded on the general law of the country, but on the war-time legislation you have read to us this morning.

Mr. MARTIN. Wholly aside from the legislation, the Government bound us to buy it at a fair value on its demand; and when the legislation came into being, then it was that the Government agreed to sell to us on our demand.

Mr. McKENZIE. This New York gentleman, who, at that time, had on a soldier's uniform, I presume, and was connected with the Ordnance Department, agreed with you that that contract was good, and that the Government would be bound under the provisions of that contract?

Mr. MARTIN. I am sure he did, or he would not have executed it, if he had doubted the legal authority to do so.

Mr. McKENZIE. Of course, I am not going to enter into a discussion with you about the legality or the illegality of it, except that I simply want to say this, that in my judgment the Government's hands are just about as effectively tied in the manner in which this thing was done as they could possibly be tied by any legal contract. And I may have the wrong view of what the aiding of the Government consists of. But I ask you now, to have it go into the record, if it is your view of the matter that the construction of the plant in the way in which this plant was constructed and the entering into the character of contract which is in evidence is a proper evidence of supporting the Government?

Mr. MARTIN. I certainly think the company acted fairly and justly in this matter. We have agreed to purchase this property at the demand of the Government at a fair value. We have complied with every request made of us by the Government; we hold ourselves ready to carry out that plan. You will find many contracts made during the war by which extensions and enlargements of plants were made on the property of others, and in how many of them will you find a provision which requires the owner of the land to pay fair value as distinguished from junk value? We think we are in a position to protect the Government. Naturally, this plant was part of our system, a system on which we had built up public service. To create two separate and distinct operations there would vitally interfere with our whole arrangement and our whole public service.

Mr. McKENZIE. Let me ask you, How do you arrive, in such matters as this, at a fair valuation?

Mr. MARTIN. The contract provides for the selection of arbitrators. The Government selects one, the company selects one, and those two select the third, and they consider the question of fair value in the light of those principles of law which would naturally govern a court in determining value.

Mr. McKENZIE. It is true that a fair valuation is such a valuation as the property would have in the community in which the property is located, as a general proposition. Is not that one way of arriving at fair valuation?

Mr. MARTIN. Is not that a different question? I doubt whether that would be the basis here.

Mr. McKENZIE. That is the general rule. But the general rule of fair valuation could not apply in this case, because there would be no competition.

Mr. MARTIN. Yes.

Mr. McKENZIE. No one could bid on it.

Mr. MARTIN. If you ask me that question, I do not believe that principle would apply here, because we engaged to buy it at a fair value, which means its value as a going extension, and it is a going property.

Mr. McKENZIE. You are willing to do that now?

Mr. MARTIN. Yes, sir; we are willing to carry out our contract to the letter.

Mr. McKENZIE. Do you feel, Mr. Martin, that in serving the Government at this time you made any great sacrifice?

Mr. MARTIN. I have explained to you what we expended. We have never had any of it paid back.

Mr. McKENZIE. Are you operating that plant at the present time?

Mr. MARTIN. Well, not at this moment, because the rivers are full now. We are not operating it this very day.

Mr. McKENZIE. I understand you are paying a rental to the Government?

Mr. MARTIN. Yes; we are paying a rental to the Government.

Mr. McKENZIE. How much are you paying?

Mr. MARTIN. It is a mill and a half per kilowatt hour of power generated.

Mr. HULL. What are you receiving for power at the present time?

Mr. MARTIN. What are we receiving?

Mr. HULL. Yes; what are your prices?

Mr. MARTIN. Delivered?

Mr. HULL. Yes.

Mr. MARTIN. It ranges from 5 mills up, delivered over our transmission system.

Mr. HULL. I mean per horsepower?

Mr. MARTIN. It averages about $25 per horsepower per year, delivered.

Mr. HULL. How does that compare with the price received generally by power companies, say at Niagara Falls, for primary power?

Mr. MARTIN. I have some records of comparison here. This is taken from a Department of Commerce publication dated in 1920, showing the cost per horsepower hour to the consumer of light and power generated at central electric stations, based on the use of 3,000 hours per year. For Alabama, the price per horsepower hour in 1907 was 2 cents. In 1912 it was 1.9 cents, and in 1917 the price had gone to 7 mills. There was a reduction from 2 cents to 7 mills. In 10 years it went from $72 per horsepower to $21, and that is the average in Alabama to-day.

In Georgia the price is the same as in 1907. In Mississippi the price per horsepower was $96 in 1907, and $93 in 1917. The price per horsepower hour in Mississippi was 3 cents in 1907, and it is 3 cents now. So, taking the lowest and the highest, taking Alabama at 7 mills and Mississippi at 3 cents you can get an idea of what the average is, and the same thing is true in connection with the price per horsepower per year, $21 for Alabama and $93 for Mississippi.

Mr. HULL. Why is there that discrepancy?

Mr. MARTIN. It is due to the fact that there is no hydroelectric development in the State of Mississippi. There are no large central stations distributing power, and hence there is that great discrepancy.

Mr. HULL. How does that compare with the price you are paying to the Government for the power you are getting from the Government?

Mr. MARTIN. We pay the Government, but we are supplying all the fuel and we transmit the power.

Mr. HULL. There can be no comparison there.

Mr. JAMES. Who drew up this contract?

Mr. MARTIN. I have explained that Col. Williams was the officer representing the Government.

Mr. JAMES. Did he draw it up or did you draw it up?

Mr. MARTIN. You know it is a question of how lawyers work together. He drew a part of it and I drew a part of it, and we worked together until it was completed.

Mr. JAMES. Did you draw up section 22?

Mr. MARTIN. I do not recall now.

Mr. JAMES. Was it your suggestion or his suggestion?

Mr. MARTIN. As to what?

Mr. JAMES. Section 22.

Mr. MARTIN. Well, I could only say it was drawn up in a mutually satisfactory form. He undoubtedly drew a part of it, and undoubtedly I made suggestions as to a part of it.

Mr. JAMES. In regard to the suggestion for the purchase of it by your company, was that your idea or his idea?

Mr. MARTIN. I can not say, Mr. James. But I will take the responsibility of saying it was ours.

Mr. JAMES. Did you consult any outside attorney in regard to the wording of section 22?

Mr. MARTIN. I do not think we did.

Mr. JAMES. Why was there a delay of 11 months in having the contract signed?

Mr. MARTIN. I was living in Alabama and these gentlemen were living in Washington. Capt. Noble died in the midst of the work. There is no particular reason I could give. It was one of the many contracts not completed.

Mr. JAMES. How long did you talk with Col. Williams when you saw him in New York City?

Mr. MARTIN. I met him several times.

Mr. JAMES. I mean the last time.

Mr. MARTIN. Probably five minutes.

Mr. JAMES. Did you see Col. Beames?

Mr. MARTIN. No.

Mr. JAMES. How much of a bond did you put up to guarantee the faithful performance of the contract against labor liens, etc.? Was it $50,000?

Mr. MARTIN. It was $50,000.

Mr. JAMES. When was it put up? I see by the contract you had a year to put it up.

Mr. MARTIN. It was put up within that time.

Mr. JAMES. Within a year? Was there not a bond given to the United States before a year after you first started negotiations or started work?

Mr. MARTIN. My recollection is that it was given after the contract was actually executed.

Mr. JAMES. That was a year after you got the contract for the station?

Mr. MARTIN. Yes; while the contract was in process.

Mr. JAMES. The work started in December, 1917, and you did not put up a bond until December, 1918, did you?

Mr. MARTIN. That is my recollection.

(Thereupon a recess was taken until 2 o'clock p. m.)

AFTER RECESS.

The committee met, pursuant to recess, at 2 o'clock p. m.

STATEMENT OF MR. THOMAS W. MARTIN—Resumed.

The CHAIRMAN. Mr. Martin, we will proceed, and Mr. Kearns would like to ask you some questions.

Mr. KEARNS. At the time the Government entered the Warrior plant, how much money had you invested in that plant?

Mr. MARTIN. In the plant and in services and stations and lines leading back to our system we had invested approximately $3,000,000, but you might remember this, Mr. Kearns, in building a steam plant, which is a reserve, for a system such as ours, we also add water-power equipment, and then add steam to balance it up, so that you can not segregate the investment in steam from the investment in the main system, because one goes to balance the other.

Mr. KEARNS. Then the Government has no interest in the steam system?

Mr. MARTIN. No; as I say, this $3,000,000 which I spoke of as investment in line and equipment in connection with the Warrior station was only a part of our whole system which represented some $35,000,000 of investment.

Mr. KEARNS. Since this contract was entered into between your company and the Government, how much money, by virtue of the contract, has the Government invested there?

Mr. MARTIN. Approximately $5,000,000 was invested in the plant, substation, and the transmission line to Sheffield.

Mr. KEARNS. Does that include the extension?

Mr. MARTIN. Yes.

Mr. KEARNS. That includes the extension, the substation, and transmission lines?

Mr. MARTIN. Yes.

Mr. KEARNS. And that was approximately $5,000,000?

Mr. MARTIN. $5,000,000.

Mr. KEARNS. Then the Government has invested $5,000,000 and your company has invested $3,000,000?

Mr. MARTIN. We have $3,000,000 in the station; $5,000,000 was the Government's investment in plant and line; in the plant the Government had approximately $3,400,000.

Mr. KEARNS. Whatever right you have to purchase from the Government is found in article—what is the number of that article?

Mr. DENT. Article 22, I think it is.

Mr. KEARNS. Yes; article 22 of your contract, which is dated December 1, 1917; is that right?

Mr. MARTIN. Yes, sir.

Mr. KEARNS. I am now reading from article 22: "At any time subsequent to three years after the termination of the war the United States shall have the option to sell to the contractor, and the conractor shall, upon writen demand of the United States, buy all its rights, title, and interest," and so on. If the United States fails to exercise its option, how would you have the right to buy?

Mr. MARTIN. Under the next succeeding provision, Mr. Kearns. Under subdivision 3 you will notice this language:

"The contractor may also at any time demand that the United States convey to it all of the right, title, and interest of the United States in and to the Warrior extension and the Warrior substation upon payment to the United States of any excess of the actual cost of said properties over the amount of said accumulated fund then in the possession of the United States."

Mr. KEARNS. If the United States entered into this contract with you in order to get possession of your plant as a war activity, how was it going to avail itself, under section 3 of that plant, if you had the right at any time to buy it out?

Mr. MARTIN. We might buy the title, continuing our obligation to the United States to deliver power.

Mr. KEARNS. But there is nothing in the contract saying you would be under any further obligation.

Mr. MARTIN. Yes.

Mr. KEARNS. Where is that?

Mr. MARTIN. You will find that——

Mr. KEARNS (interposing). There is not anything in section 22.

Mr. MARTIN. You will find our obligation that we shall deliver power for a period of 10 years.

Mr. KEARNS. Then what do you mean in section 3 that you have the right, on your demand, to compel the United States to turn over all of its right, title, and interest in that plant to you?

Mr. MARTIN. Yes; but that does not relieve us of the obligation to deliver power by another provision of the contract.

Mr. KEARNS. This contract was entered into on December 1, 1917, or it bears that date.

Mr. MARTIN. Yes, sir; it bears that date.

Mr. KEARNS. When was this contract actually entered into?

Mr. MARTIN. On the date of the false report of the armistice, 1918.

Mr. KEARNS. That was some time in November?

Mr. MARTIN. Yes, sir; November 9.

Mr. KEARNS. About the 2d or 3d of November, was it not?

Mr. MARTIN. November 9.

The CHAIRMAN. The date of the actual armistice was November 11.
Mr. KEARNS. Yes; but he refers to the day of the false report.
The CHAIRMAN. That was about three or four days before that.
Mr. KEARNS. I thought it was earlier in November than that, about the 4th.
The CHAIRMAN. No; I think it was a little later than that.
Mr. KEARNS. At that time this statute had been passed that would authorize the Secretary of War to sell this or any other plants.
Mr. MARTIN. Yes.
Mr. KEARNS. But at the time this contract bears date—that is, on December 1, 1917—that statute, of course, had not been passed.
Mr. MARTIN. That is true, Mr. Kearns.
Mr. KEARNS. And were it not for this enabling statute, you would not have any authority to enter into this contract?
Mr. MARTIN. The United States could not bind itself to agree to sell to us.
Mr. KEARNS. Yes; that is what I mean.
Mr. MARTIN. That is correct, Mr. Kearns. Of course, I suppose that you gentlemen who have been on this committee can appreciate the position in which many manufacturers, many producers of equipment, and many contractors were in in the early days. There were thousands of people who went ahead on verbal requests or requests by telephone or any kind of request from Government officials to produce equipment or what not for the purpose of going forward with the war program. The question of contract rights and obligations were secondary. The question was to do the thing that the officials of the Government wanted. The question of terms and conditions and obligations of the contracts remained to one side while we were doing the work the Government wanted.
Mr. KEARNS. Does your company claim any right to the buildings that the Government built on your land, aside from what rights you are given under the statute that was passed after December 1, 1917?
Mr. MARTIN. No.
Mr. KEARNS. What is your answer?
Mr. MARTIN. If I understand your question, you mean do we claim any right by virtue of the fact that they are fixtures?
Mr. KEARNS. Yes.
Mr. MARTIN. We do not. We simply recognize the Government has the right, title, and interest in that property, and that the Government has agreed to sell it to us at a fair value, and whatever that property appraises at as the fair value under this contract we think we have a contract with the Government to purchase it.
Mr. KEARNS. Let me see if I understand you, Mr. Martin. Your company is not claiming any interest in that part that the Government erected on this land except what rights you are given under this statute passed subsequent to December 1, 1917?
Mr. MARTIN. And the contract entered into, which is under discussion here.
Mr. KEARNS. Now, let me understand you. Would you claim any right because the Government without authority entered upon your premises and erected buildings on your land; do you claim a right to retain those buildings?
Mr. MARTIN. No; Mr. Kearns, we do not.
Mr. KEARN. You do not claim that?
Mr. MARTIN. No.
Mr. KEARNS. All the rights you are claiming are under and by virtue of your contract as construed under the statute which was passed, giving the Secretary of War authority to dispose of real estate?
Mr. MARTIN. You say as construed by the Secretary of War. We can not agree with the construction that the law officers of the Government place upon it. We claim our legal rights as expressed here and as interpreted by ourselves under this contract.
Mr. KEARNS. Has the Government taken any power under this contract?
Mr. MARTIN. Yes.
Mr. KEARNS. For how long has the Government been using power generated by your company?
Mr. MARTIN. I will put it in this form: The Government had the right to take energy, making payment therefor under the specific terms of this contract. It might suspend the taking of energy, under the terms of this contract, for a time and take energy from our system on a different basis. It suspended the taking of energy under this contract and has all along been taking energy from us under a separate arrangement, as a power company, because it did not need the volume of power, by reason of the armistice coming, that was contemplated in the making of the contract.

Mr. KEARNS. Has the Government each month been paying you $30,000?
Mr. MARTIN. Oh, no, sir; it never has paid us $30,000 a month.
Mr. KEARNS. It provides for that in this contract.
Mr. MARTIN. Yes, Mr. Kearns; it does provide that the Government, so long as it takes power under this contract, shall pay $30,000 a month as a minimum charge. It never did pay the $30,000 a month, and it never did take under this contract. You will see that the very next section says that the Government may suspend the taking of power under this contract, whereupon its obligation to pay $30,000 a month ceases, and we got formal notice from the Government that they desired to suspend its right to take power under this contract, which we accepted, of course, and thereupon the Government arranged with us, wholly independently, to serve power to the Government from our system in a very much less quantity, paying therefor at rates in effect by the public service commission.
Mr. KEARNS. Just one more question, Mr. Martin: Your company does not claim anything at Muscle Shoals except the Warrior plant and its connecting lines?
Mr. MARTIN. At Muscle Shoals?
Mr. KEARNS. Yes.
Mr. MARTIN. Yes; we have——
Mr. KEARNS. I mean any part that would be included in the Ford offer.
Mr. MARTIN. Yes. The Alabama Power Co. owns in fee simple the abutment sites at the proposed Dam No. 3, which the Government is asked to construct under the Ford offer.
Mr. KEARNS. And that is included in the Ford offer?
Mr. MARTIN. Yes, sir; the abutment sites and some other lands which we own in fee simple.
Mr. KEARNS. At how much money do you value that interest?
Mr. MARTIN. I could not answer that question, Mr. Kearns. We have never placed any value on it. We have owned it for many years.
Mr. KEARNS. Have you not any idea of what the value of that property is?
Mr. MARTIN. I could not undertake to express any opinion on that question now. The property has been in our possession and ownership for 10 or 15 years, in our company and its preceding company.
Mr. KEARNS. Did the Government ever make any contract with you for that?
Mr. MARTIN. No, sir.
Mr. KEARNS. And you have no idea what that interest would be worth?
Mr. MARTIN. No; none that I would care to express now, Mr. Kearns.
Mr. KEARNS. Then, if Congress should authorize the Secretary of War to accept the Ford offer, then it would be transferring to Ford a part of your property for which the Government never had any kind of a contract.
Mr. MARTIN. That is correct, Mr. Kearns. We did convey to the Government, in fee simple, several years ago, the site at which the Wilson Dam is being erected. We also owned that and we conveyed that to the Government in 1918 for $1.
Mr. KEARNS. But that does not include these other properties?
Mr. MARTIN. No, sir; that land which constituted the abutment sites of Dam No. 2, the Wilson Dam. we had expended upward of $500,000 on its development, and at the inception of the war we were asked to hasten the whole program and we conveyed that title to the Government for $1.
Mr. KEARNS. Was there a provision in the contract or in this conveyance whereby the Government was to return it to you?
Mr. MARTIN. No, sir; we practically donated it to the Government.
Mr. KEARNS. You donated $500,000 worth of property to the Government for $1?
Mr. MARTIN. Yes, sir. I have in my hands the letter, if you care to know about it, to the Government officers, tendering it, giving our reasons for it, and the answer of the Secretary of War acknowledging it with thanks and appreciation, if you would like to hear it, I would be glad to read it.
Mr. KEARNS. You can put that in the record.
Mr. HILL. May he not read that, Mr. Chairman; I would like very much to hear it.
The CHAIRMAN. Is it very long, Mr. Martin?

Mr. MARTIN. No, sir.

The CHAIRMAN. Then you might read both the letter transmitting the offer and also the letter accepting it.

Mr. MARTIN. I am reading from a letter dated February 18, 1918:

ALABAMA POWER Co.,
Birmingham, Ala., February 18, 1918.

Col. C. KELLER,
Corps of Engineers,
Office of the Chief of Engineers, United States Army,
Washington, D. C.

SIR: Following the several interviews which I have had with you recently on the subject of the desire of the Government to acquire him the Muscle Shoals Hydroelectric Power Co. the dam site and certain other properties at Muscle Shoals, I have conferred fully not only with the directors of that company but also with the representatives of the security holders of the Alabama Traction, Light & Power Co. (Ltd.). As I believe I explained to you, the last-mentioned company is interested by reason of its stock holdings in Alabama Power Co., which latter company owns the stock of the Muscle Shoals Hydroelectric Power Co.

The properties in question represent a very heavy investment by our company, and have occupied an important position in our plans for securing power for the future. For several years we have worked on plans for ultimately developing these water powers as an integral part of the hydroelectric system which will be required by our companies to meet the needs of the communities which they serve. Much of this work was done by us in collaboration with the Army engineers, looking toward a development in cooperation with the Government on some such plan as was favorably reported on by the Army engineers in House Document No. 1262, Sixty-fourth Congress, first session.

I am adverting very briefly to these features, as I judge from the several interviews which I have had with you and with other representatives of the Government that you are fully aware of what the company has done in preparation for the ultimate development of this water power, and I believe you appreciate that it should receive consideration in the disposition of any surplus power not required for the needs of the Government.

From our recent interviews it is obvious that our respective views as to the value of our property and the price which you would agree to pay are quite irreconcilable. As directors of a large public-service corporation, we have always believed that in addition to the development of our water powers at Muscle Shoals being a very valuable and necessary complement to our system throughout the State, the large industrial community which would grow up at Muscle Shoals would add a special value to that power plant. In times like these, however, such considerations must be secondary to the urgent needs of the Nation to secure these properties immediately for the carrying out of the Government project for the production of war nitrates, and we have accordingly determined to donate our lands to the Government for this purpose. I have already given instructions to the company's attorneys for the preparation of the necessary deeds of conveyance.

It is our understanding from you that the Government only desires to acquire the site at Dam No. 2 and adjacent properties, with flowage easement on such of our other properties as may be affected by this development.

I need hardly assure you of the desire of the company to cooperate with the War Department to the fullest extent in placing at your disposition the benefit of all our engineering studies and records relating to the projected development.

I trust that this disposition of the matter meets with your views.

Yours, very truly,

JAMES MITCHELL, *President.*

Then, on the 20th of February, 1918, a letter from the Secretary of War:

WAR DEPARTMENT,
Washington, February 20, 1918.

Mr. JAMES MITCHELL,
President Alabama Power Co., Birmingham, Ala.

DEAR SIR: Referring to your letter of the 18th instant, addressed to Col. Keller, in which you express the willingness of your company to donate to the United States certain properties and flowage easements needed for the proposed Federal power development at Muscle Shoals, I beg to acknowledge with thanks the company's generous and public-spirited action.

The further steps necessary in regard to the matter will be given immediate attention.

Very truly, yours,

NEWTON D. BAKER, *Secretary of War.*

Then, I have in my hand a photograph of the check which we received from the United States in the sum of $1 in payment for these lands.

Mr. KEARNS. And that was land connected with Dam No. 2?

Mr. MARTIN. Dam No. 2, the Wilson Dam.

Mr. KEARNS. Which had cost your company $500,000?

Mr. MARTIN. Yes, sir; slightly less than $500,000 we had expended in connection with that development.

Mr. KEARNS. Would the other land which you have at Muscle Shoals, or other property of whatever character that is included in the Ford offer, either land or property, or land and property, be worth as much as the land at Dam No. 2 that you transferred to the Government for $1?

Mr. MARTIN. Would it be worth as much?

Mr. KEARNS. Would it be worth as much or more?

Mr. MARTIN. I would not want to say whether it was worth as much or more, but $500,000 does not measure the value of the land.

Mr. KEARNS. The value of the land you still have there?

Mr. MARTIN. Yes, sir.

Mr. KEARNS. That is included in the Ford offer?

Mr. MARTIN. Yes, sir. Of course, our expenditures in that connection cover a long period of years, investigations and studies and plans and what not. We had some engineering and borings at the sites and we carried on for years civil engineering work as well as the purchasing of land.

Mr. KEARNS. At the time these letters were written, your letter offering your land at Dam No. 2 to the Government for $1, and the Government's acceptance, was that before or after you had entered into your contract for the air nitrates plant?

Mr. MARTIN. You mean whether it was before or after this Warrior situation arose?

Mr. KEARNS. I mean before or after you had donated or really given these rights to Dam No. 2 to the Government.

Mr. MARTIN. We started in on the Warrior extension work with the Government late in December, 1917. This matter of donating the land to the Government arose in February, 1918, two months later.

Mr. KEARNS. Two months after that.

Mr. MARTIN. Approximately two months.

Mr. MCKENZIE. If you will pardon me, Mr. Kearns, following your question, the point which it occurs to my mind Mr. Kearns is trying to arrive at, is whether or not at the time you wrote this letter to the War Department and they replied, whether that was subsequent to the date of the contract entered into between the Air Nitrates Corporation and the Government of the United States covering the plant constructed by the Air Nitrates Corporation.

Mr. MARTIN. I do not know the date of that contract, Mr. McKenzie.

Mr. KEARNS. Whatever land you own, however, at Muscle Shoals, that is to be included in the Ford offer, you realize the Government would have the right to condemn?

Mr. MARTIN. Of course, no one questions the right of the Government to condemn property for governmental purposes in accordance with the Constitution, Mr. Kearns. There are limitations upon those questions, possibly.

Mr. MILLER. Prior to the war, the Alabama Power Co. was engaged in this business of creating and distributing power generally throughout the State of Alabama or the northern portion of it, and in the progress of its enterprise it installed this plant on the Warrior River.

Mr. MARTIN. Yes, sir; that is correct.

Mr. MILLER. As you say, a relay plant or a reserve plant.

Mr. MARTIN. A reserve plant; yes.

Mr. MILLER. And for the purpose of being a reserve plant, and to function as such, it was connected up with your distribution system?

Mr. MARTIN. Yes.

Mr. MILLER. That plant is south of a point called Jasper, is it not?

Mr. MARTIN. Yes; it is southeast of Jasper, Mr. Miller.

Mr. MILLER. You had started a line from the Warrior steam plant as far north as Jasper?

Mr. MARTIN. Yes; and as I recall it had also extended somewhat northwesterly from Jasper to certain coal mines.

Mr. MILLER. Now, with that completed before the war and in operation, as your reserve plant or a part of it, it became necessary, then, when the subsequent arrangement was entered into between you and the War Department to complete that transmission line on northward from Jasper to Muscle Shoals?

Mr. MARTIN. Yes.

Mr. MILLER. How many miles is it from the Warrior steam plant to Jasper or about how many?

Mr. MARTIN. It is probably about 20 miles.

Mr. MILLER. And from Jasper on to Muscle Shoals is approximately how far?

Mr. MARTIN. About 68 miles.

Mr. MILLER. Then, so far as the Government's necessities were concerned, the transmission line to be completed to comply with the Government's necessities was 68 miles from Jasper northwesterly to Muscle Shoals?

Mr. MARTIN. No, sir. You see this line from the Warrior plant to Jasper was a 44,000-volt line. It was therefore of small capacity, and you need a 110,000-volt line to transmit power a distance of 90 miles efficiently.

Mr. MILLER. Then you had to practically reconstruct that line?

Mr. MARTIN. No, sir; we did not reconstruct that line. It was a question of building a new line all the way back from the Warrior plant.

Mr. MILLER. From Jasper?

Mr. MARTIN. No; from the Warrior plant.

Mr. MILLER. From the Warrior plant to where?

Mr. MARTIN. To Sheffield.

Mr. MILLER. Then you built two transmission lines.

Mr. MARTIN. The line still stands serving Jasper and other places in that district, on the same right of way, and side by side is a new line constructed from the Warrior plant 90 miles to Sheffield.

Mr. MILLER. Now, I see very clearly that in the construction of the Government's activities there they utilized your foundations at the Warrior plant to construct additional units, and so on, and as a result of the method of construction, whether the most practical or not, the Government's activities there were inseparably inerwoven and interlaced with your activities in the physical construction of the Warrior steam plant.

Mr. MARTIN. Yes, sir; that is right.

Mr. MILLER. They were not capable of a division in any wise.

Mr. MARTIN. That is true, Mr. Miller. It was not physically possible to extend the plant and do what was necessary to increase that plant and make it a separately contained plant.

Mr. MILLER. Then, preceding this time, you had a verbal understanding which, eventually, ripened into a contract, which was signed on the day that the false report of the armistice was circulated in the United States, but which dated back to the 1st day of December, 1917; that is right, is it not?

Mr. MARTIN. Yes, sir; that is correct.

Mr. MILLER. Now, simultaneously with the building of the Government's addition to the Warrior steam plant, or very closely connected with it, the Government commenced constructing its own steam plant up at nitrate plant No. 2.

Mr. MARTIN. Yes; that is true.

Mr. MILLER. Which was of a capacity approximately double what they had put in at the Warrior steam plant.

Mr. MARTIN. Yes.

Mr. MILLER. Now, getting back to this contract, the contract was drawn to cover the very contingency that has now arisen.

Mr. MARTIN. It was, Mr. Miller.

Mr. MILLER. And the condition of the Government and the condition of the Alabama Power Co. is just in that status to which your contract applies so far as section 22, I believe, is concerned.

Mr. MARTIN. Yes, sir; neither the Government nor the power company ever contemplated that the United States would desire to engage in the power business, but the Government contemplated that it would desire to purchase power from us, under an arrangement which would insure a fair, honorable, decent way for the Government to get the fair value out of the property it created. That was the basis of our understanding.

Mr. MILLER. Now, let us see what that understanding is. You were to operate not only for your use there at the Warrior steam plant but also to operate the units installed by the Government or that portion installed by the Government.

Mr. MARTIN. Operate it, maintain it, and insure it at our own expense; yes, sir.

Mr. MILLER. And furnish electric current to the Government?

Mr. MARTIN. Yes.

Mr. MILLER. At 6½ mills per kilowatt hour?

Mr. MARTIN. At 6½ mills.

Mr. MILLER. Now, the Government had put in $4,978,000, according to the report of the Chief of Ordnance, or as you say, approximately, $5,000,000, which is correct, I dare say, Mr. Martin.

Mr. MARTIN. It is slightly under $5,000,000.

Mr. MILLER. Now, you say you had put in your installation at the Warrior steam plant, before the Government made any additions thereto, approximately $3,000,000.

Mr. MARTIN. Yes.

Mr. MILLER. Then after the Government had embarked jointly with you the investment stood as 3 is to 5; that is right, is it not?

Mr. MARTIN. As 3 is to 5?

Mr. MILLER. You say that before the Government put anything in there you had an investment of approximately $3,000,000.

Mr. MARTIN. Yes, sir.

Mr. MILLER. And the Government put in approximately $5,000,000.

Mr. MARTIN. In the power plant and transmission line, together.

Mr. MILLER. Yes.

Mr. MARTIN. There was about $3,500,000——

Mr. MILLER (interposing). Then your respective interests in the money paid in would be approximately as 3 is to 5?

Mr. MARTIN. In station equipment it is about 3½ to 3.

Mr. MILLER. The Ordnance Department tells us that we have put into the Warrior generating plant $3,337,000.

Mr. MARTIN. That is correct.

Mr. MILLER. We have put into the Warrior substation $384,000, and we have put into the transmission lines $905,000, and then they have included the Drifton Railway with which we are not concerned just now, because I am simply getting at the comparative sums of money that the United States Government and the Alabama Power Co. put in there, and as near as I can get the figures, it is about as 3 is to 5, because the United States Government put in $5,000,000 and you put in $3,000.000.

Mr. MARTIN. Now, there are some other elements, if I may call your attention to them.

Mr. MILLER. I am just taking your word that you have put in approximately $3,000,000 there.

Mr. MARTIN. Prior to that time; yes.

Mr. MILLER. Yes; prior to that time, and at the time the Government came into your activities.

Mr. MARTIN. Yes.

Mr. MILLER. Now, after the Government came into your activities, it put in $5,000,000, approximately?

Mr. MARTIN. Yes.

Mr. MILLER. Now, what did you put in after the Government came in?

Mr. MARTIN. We put in by way of investment, and certain expenses which I enumerated this morning, something in excess of $1,000,000, and in addition to that, by this investment in tie lines, the Government was enabled to draw on our entire system for its power supply, and you can not overlook the fact of the reserve value of our entire system in connection with the Warrior station.

Mr. MILLER. What I was getting at was the respective amounts of money involved.

Mr. MARTIN. Yes.

Mr. MILLER. You testified this forenoon, I believe, that your expenses in connection with the matter were $1,016,000?

Mr. MARTIN. That is correct.

Mr. MILLER. Now, we will take $1,016,000, which, added to your $3,000,000 of previous investment, would make approximately $4,000,000.

Mr. MARTIN. Yes.

Mr. MILLER. Then your relations would be about as 4 is to 5?

Mr. MARTIN. If you want to separate the Warrior plant from the rest of the system; yes.

Mr. MILLER. No; I am not separating it. I am keeping it with the plant, and what I am getting at there is who has the major investment there, you or the United States of America? Now, after the Government had put in approximately $5,000,000, you were to operate this plant and charge the Government 6½ mills per kilowatt hour?

Mr. MARTIN. Yes.

Mr. MILLER. And out of that the Government was to retain a fund of 2 mills, which was to be put into a fund by itself, was it not?

Mr. MARTIN. Yes; that is correct.

Mr. MILLER. Now, this contract further provides that when that accumulating fund of 2 mills shall have reached the amount of the Government's investment, the Government's investment should be turned over to the Alabama Power Co.?

Mr. MARTIN. Yes.

Mr. MILLER. In other words, you were charging the Government 6½ mills per kilowatt hour, and there was 2 mills put down as a sinking fund and retained by the Government, and when those 2 mills should have accumulated into approximately $5,000,000, the Alabama Power Co. should absorb the entire United States Government holdings there, so far as they related to the Warrior steam plant?

Mr. MARTIN. Now, we have got to get at that 6½ mills and see just what the relations of the parties are.

Mr. MILLER. I am taking the terms of your contract.

Mr. MARTIN. Yes; but we were required to pay to the Government 2 mills as a sinking fund; that is true.

Mr. MILLER. Hold on; was that 2 mills that you were required to pay or was that taken out of the 6½ mills?

Mr. MARTIN. I was going to say that the result is just the same.

Mr. MILLER. I understand that the result mathematically is just the same; but it is quite different from the Government's angle of it. Now, look at your clause 18 or 19 and give me your construction of article 18, on page 154 of part 3 of the hearings. Let me read and see if I am not right:

"The United States shall pay to the contractor [which is the Alabama Power Co.] at the rate of 6½ mills for each k.w.h. of energy actually delivered to the United States at the Warrior substation. Said rate is based upon the power factor of the load of the United States measured at the Warrior substation being no less than 85 per cent. Energy generated at the Warrior extension or the Warrior substation shall be measured at the low tension side of the step-up transformers at said Warrior substation."

The balance of that section relates to the voltage. Now, what I am getting at is where did this 2 mills come from?

Mr. MARTIN. It came in this way——

Mr. MILLER (interposing). Let us get the provision of the contract governing that.

Mr. MARTIN. It you will go back to article 17 you will see "Payments by contractor."

Mr. MILLER. Mr. Martin, is this not covered in article 19?

Mr. MARTIN. Yes; but you have to consider 17 and 19 together, I think, to get at this.

Mr. MILLER. Yes; I see it is referred to in section 17.

Mr. MARTIN (reading):

"Beginning at the termination of the period of preliminary operation mentioned in article 14, and so long as the United States shall require the contractor to supply energy to the United States for the operation of either or both of said nitrate plants, the contractor shall pay to the United States monthly for the use of the Warrior extension and Warrior substation interest at the rate of 6 per cent per annum upon the actual cost to the United States of said extension and substation, less the amount of the accumulated fund referred to in article 19, as the same may vary at each monthly computatien of such interest. In computing such cost there shall be excluded all payments by the United States for supervision," etc. "* * * The contractor shall also pay to the United States interest monthly at the rate of 6 per cent per annum upon the sum of $30,000" expended in the Drifton extension. Now that operated in this manner: There was invested in the Warrior extension, $3,417,602.70.

Mr. MILLER. Where do you get those figures?

Mr. MARTIN. That is in the record.

Mr. MILLER. You mean that is the Chief of Ordnance estimate.

Mr. MARTIN. Yes, sir.

Mr. MILLER. You are taking then the figures of the Chief of Ordnance?

Mr. MARTIN. Yes, sir. And the Warrior substation, $383,756.30; Drifton extension, $30,000, or $3,831,496.06. We are required to pay 6 per cent on that, or $229,887.54 a year. That is the interest charge. You have got to take that into account in getting at the question to which you are leading.

Mr. MILLER. Well, we will take it into account. Now, return to paragraph 19 of your contract which reads as follows:

"From and after such date as the contractor shall begin to operate the Warrior extension and Warrior substation as a part of its own system, the United States shall retain 2 mills per k. w. h. from the amounts payable to the contractor by the United States under article 18 hereof, except that (*a*) in no case shall the said minimum monthly payment by the United States be less than $30,000, and (*b*) the United States shall retain no part of the payments due for energy delivered by the contractor at a rate in excess of the capacity at the time of the said Warrior extension."

Now, you are charging there only on the Government's own property; is not that true?

Mr. MARTIN. Six per cent; yes.

Mr. MILLER. They pay you these amounts, then, for that part of your increased capacity, the United States putting in this investment with yours?

Mr. MARTIN. The Government pays us 6½ mills for power and we contract to pay the Government interest on its investment.

Mr. MILLER. But according to exception (*b*) the United States shall retain no part of the payments due for energy delivered by the contractor at a rate in excess of the capacity at the time of the said Warrior extension, provided that said 2 mills shall no longer be retained by the United States when the accumulated fund shall equal the actual cost to the United States of the Warrior extension and the Warrior substation, computed as set forth in article 11.

Now, when this accumulated fund reached the sum of $4,417,000, the entire property investment of the United States, so far as it was connected with the Warrior substation, passed to the Alabama Power Co.

Mr. MARTIN. We had paid for it.

Mr. MILLER. But you operated it in the meantime.

Mr. MARTIN. We were to pay a certain amount for it; yes.

Mr. MILLER. How much?

Mr. MARTIN. Actual cost.

Mr. MILLER. Actual cost?

Mr. MARTIN. Yes, sir.

Mr. MILLER. Now, where in your contract do you say that at the time when this accumulated fund should reach the amount of the Government's investment, you should pay the Government what it had invested?

Mr. MARTIN. I do not say that.

Mr. MILLER. No; that is not there.

Mr. MARTIN. You see the theory of this payment of 2 mills was to return to the Government its capital investment.

Mr. MILLER. You returned to the Government its capital investment?

Mr. MARTIN. Yes, sir; we simply repaid to the Government this $3,800,000.

Mr. MILLER. Now, let us see about that. We will take up that contingency and see how that applies. Let us look at article 22, and I am reading now from the top of page 157, subdivision (*b*).

"If the value so fixed be greater than said fund, then the United States shall upon payment by the contractor of the amount by which such value is greater than said fund, or payment thereof being secured as hereinafter provided, convey all of its rights, title, and interest in and to said properties to the contractor by proper instruments in writing within 60 days after notice of the award, retaining in payment the whole of said fund."

Mr. MARTIN. Yes.

Mr. MILLER. Now, suppose you purchased the property from the Government, do you take the fund?

Mr. MARTIN. Do we?

Mr. MILLER. Yes.

Mr. MARTIN. No, sir. That was in the event of an arbitration fixing the value of the property at any given figure, whatever might be in this accumulated fund was to go as a credit on that value thus fixed.

Mr. MILLER. Suppose that accumulated fund is equal to the value fixed by the arbitrators as the value of the plant.

Mr. MARTIN. If the value was fixed as the amount in the fund?

Mr. MILLER. Yes.

Mr. MARTIN. Then, there is a provision for conveying the title to the company.

Mr. MILLER. Yes. Now, where does the Government get any money out of it?

Mr. MARTIN. By the payment of the 2 mills. That is a capital payment.

Mr. MILLER. Then you construe it that when this accumulated 2 mills payment should have reached the value of the United States interest there, the United States retained this 2 mills constantly—did you say you paid that to the United States?

Mr. MARTIN. Yes; we certainly would.

Mr. KEARNS. May I ask just one question, Mr. Miller?

Mr. MILLER. Yes.

Mr. KEARNS. I understand the Government was to pay you 6½ mills per kilowatt hour for your energy.

Mr. MARTIN. Yes.

Mr. KEARNS. And instead of paying you the full amount of 6½ mills it would keep 2 mills?

Mr. MARTIN. That is correct.

Mr. KEARNS. And those 2 mills belonged to you?

Mr. MARTIN. Yes, sir.

Mr. KEARNS. And when the 2 mills grew into a sum equal to the amount the Government had invested in your property it was to transfer the property to you; is that it?

Mr. MARTIN. Yes, sir.

Mr. MILLER. Now, that is one element, and let us turn to——

Mr. MARTIN. You understand that 6½ mills was fixed as the base price for energy based on coal at $2.30.

Mr. MILLER. Yes.

Mr. MARTIN. Based upon that figure of 6½ mills for energy, this arrangement was worked out. Now, we are prepared to defend and show any figures you want and any data you want as to the fairness and correctness of that figure of 6½ mills, and we were to pay the Government 2 mills into that accumulated fund on account of its capital investment in the plant.

Mr. MILLER. I think I understand that. Now, you say you were willing to take that plant from the Government as a going concern and not at its scrap value. It being indivisible and incapable of physical division, this contract was so drawn that you would have no competitor in undertaking to purchase the holdings of the United States Government in the Warrior steam plant, provided the value of the plant or the investment had not been absorbed by this fund of which we have been speaking.

Mr. MARTIN. You assume that there must be a competitor in fixing a fair value.

Mr. MILLER. Yes.

Mr. MARTIN. I think you will agree with me that under the principles of law which govern the ascertainment of fair value they are as well defined as any principles of law. Those principles of law are read into this contract, and, competitor or no competitor, far value can be fixed.

Mr. MILLER. There is a way of fixing the fair value by what an article would bring in the market, free and open, where the purchaser or any contemplated purchaser would get property capable of segregation and something he could use himself. but no human being who was a bidder on this property in competition with you could ever separate his property from your property down there.

Mr. MARTIN. No, Mr. Miller; but on a reproduction basis, and considering all the elements that must enter into fair value, you do not need to consider the question of competition.

Mr. MILLER. And, furthermore, there is a clause in this agreement that in the event the United States Government should sell this property or its interest therein to any other person except the Alabama Power Co. the plant could not be operated.

Mr. MARTIN. That is correct, Mr. Miller.

Mr. MILLER. Yes.

Mr. MARTIN. And it was put in there because the situation was not capable of being divided into two operating plants.

Mr. MILLER. Then the whole thing was shaped so that the Alabama Power Co. would ultimately absorb the United States interest there, and no other human being could come in competition with the Alabama Power Co.

Mr. MARTIN. There was no way by which this arrangement could be worked out except on a basis of our agreeing to purchase the property at a fair value, and we stand ready and willing to do it.

Mr. MILLER. I understand all that, and I have had it deeply impressed here that in your relations with the United States Government you so entwined the Government's investment with your own investment and laced backward and forward until ultimately there would be no human being that could purchase or come in competition with you for the purchase of the Government's rights in that property.

Mr. MARTIN. Mr. Miller, I do not accept your premise. The Alabama Power Co. did not interlace anything. This contract was made by Government officials with us on a fair basis, and it was understood from first to last that this property was to be developed and constructed just as it was to accomplish the Government's purposes, namely, the sale and delivery of energy.

Mr. MILLER. I understand; but there are different ways of accomplishing the same result. Now, you take issue with me, let us refer to subdivision 5, of article 22, on page 157, part 3, of the hearings:

"In the event that the contractor [that is you] shall on demand of the United States fail or refuse to purchase the Warrior Extension and Warrior substation under any of the foregoing subdivisions of this article, the United States may sell the same to another, subject to the conditions that said properties shall not be operated and that they shall be removed within six months after the sale has been consummated. Upon the consummation of such a sale with another purchaser, the United States shall pay over to the contractor the whole of said accumulated fund [that is, this 2 mills fund we were talking about a moment ago] less the amount, if any, by which the actual cost of the said properties shall exceed the price realized from such sale."

Mr. MARTIN. Yes, sir.

Mr. MILLER. Now, we have got a $5,000,000 investment down there, and we have got it so interlaced and stitched up with the Alabama Power Co. that if the United States should want to sell it, it could only sell it to some person who could not operate it, and still you say that you want to buy it as a going concern, but no other human being could possibly buy it on the basis of a going concern. That gives the Alabama Power Co. a wonderful advantage, does it not, over any possible competitor?

Mr. MARTIN. The very inception of this whole arrangement looked to the thing which is done now. The United States Government appreciated that this extension could only be made in the manner in which it was made, and we obligated ourselves to buy it at a fair value in order to protect the Government in the situation of which you speak.

Mr. MILLER. And in buying it at a fair value you absolutely bar any competitor.

Mr. MARTIN. We could not afford to have our plant segregated into two parts. We could not afford to turn our plant over. That was the fundamental basis of this whole arrangement.

Mr. MILLER. You are not transferring any plant. You turn over the output of a part of your plant, but you did not turn over any plant to the United States?

Mr. MARTIN. That is exactly what we could not do.

Mr. MILLER. But the Government turned over a plant to you which bears a relation to your investment of 5 to 4, the Government being the major holder of interest there.

Mr. MARTIN. The Government advanced funds for the extension of property, and we agreed to buy that property on the basis of fair value.

Mr. MILLER. And the Government advanced an amount one-fourth more than you have put in there, but still this thing is so interwoven that when the time comes when the war shall be over and the Government shall desire to dispose of it, which time is now.

Mr. MARTIN. Yes.

Mr. MILLER. The only possible people that the Government can deal with will be the Alabama Power Co.; is not that true?

Mr. MARTIN. That is correct, Mr. Miller, and that was contemplated, and the contract from beginning to end contemplated that, and there is no other way by which this extension could have been worked out.

Mr. MILLER. I see very plainly what the contract is, but I have been wondering if there is any other human being that would put a dollar into an enterprise on such a basis as the United States Government put its money in with you. Can you conceive of any institution in the world, or can you conceive of the United States, except in the extremity of war, making such a contract?

Mr. MARTIN. This was the extremity of war, Mr. Miller.

Mr. MILLER. And I am afraid, Mr. Martin, that I am forced to believe that you took advantage of the Government in its extremity of war.

Mr. MARTIN. We resent the insinuation, sir. We did not. We made a fair, decent, honorable contract with the United States Government.

Mr. MILLER. I have the right to my interpretation, I think, Mr. Martin.

Mr. MARTIN. And I have the right to mine, too.

Mr. MILLER. And I have the right to express my opinion.

Mr. MARTIN. And I have the right to express my opinion, and I will.

Mr. MILLER. And I say, sir, that it looks to me as if the Alabama Power Co. had ingeniously interwoven the Government's interest along with yours to such an extent that they never could be segregated and that you would be the only man that could become the purchaser.

Mr. MARTIN. And I resent the insinuation.

Mr. MILLER. You can resent it all you please, Mr. Martin.

Mr. MARTIN. Yes.

The CHAIRMAN. The gentlemen will please observe order. We are getting along very nicely here, and there is no use losing your tempers.

Mr. MARTIN. The Government could have gone and built a plant. The Government came to us. The Government officials recognized the situation and wanted power, and this was the way that the Government officials had of getting power.

Mr. MILLER. It is plain that they got the power and I see the end of the horn the Government is coming out in this thing, too, notwithstanding the great patriotism that you suggested to the committee this morning, Mr. Martin.

Mr. MARTIN. Has any representative of the Government in the Ordnance Department questioned the fairness of this contract—Gen. Williams or Col. Burns?

Mr. MILLER. We will take that up——

Mr. MARTIN. And those men who made this contract?

Mr. MILLER (continuing). When we come to it.

Mr. MARTIN. They know it is a fair contract.

Mr. MILLER. You say it is a fair contract.

Mr. MARTIN. Yes, sir.

Mr. MILLER. In opposition to that, Mr. Martin, I would say that it is the most unconscionable contract I ever saw signed by people.

Mr. MARTIN. We nevertheless have our opinion.

Mr. MILLER. Now, that is your view and my view.

Mr. MARTIN. Yes, sir.

Mr. MILLER. I have no hesitation about accepting your view and you should have none in accepting my view.

Mr. MARTIN. I do not accept your view.

Mr. MILLER. And I dare say, from my reading of this contract, the Government was simply overreached under the terms of this contract or else it was taken advantage of by the exigencies of war.

Mr. MARTIN. Neither of which was the case.

Mr. MILLER. Let us now go on a little further. I am referring now to paragraph 6.

"In the event that (a) the Warrior extension and Warrior substation are not sold in the manner herein provided to the contractor or to another within the period of 10 years, referred to in article 15, or (b) said properties not having been so sold, the United States or its said successor shall cease for 365 consecutive days to take any energy from the Warrior extension; the United States shall, upon six months' notice in writing from the contractor, remove the Warrior extension and Warrior substation from the lands of the contractor unless it shall, within 90 days after receipt of such notice, proceed to exercise its option under subdivision 1 on this article."

Now, there is another contingency. If somebody should come along and should be induced to buy the United States' interest in it he could not operate the plant, and if the United States should hold it and not sell it, it must remove the plant from your property, in which case you get the benefit, likewise, of this two-mills fund.

Mr. MARTIN. There is not a cent in that accumulated fund.

Mr. MILLER. I understand there is no accumulated fund now.

Mr. MARTIN. And never was.

Mr. MILLER. But suppose the war had continued, as you were preparing for in this contract, evidently, and a great deal of your energy had been absorbed, there would be considerable in this accumulated fund, would there not?

Mr. MARTIN. That is possible.

Mr. MILLER. Yes. Now, then, let us take the power extension and transmission line. The Alabama Power Co. built those, did they, on your land?

Mr. MARTIN. Yes, sir.

Mr. MILLER. Did you own the land prior to the time the United States Government got into relations with you?

Mr. MARTIN. We had owned the right of way to a point beyond Jasper, about 20 miles.

Mr. MILLER. Then between Jasper northward, for approximately 68 miles——

Mr. MARTIN. Something like that.

Mr. MILLER (continuing). You acquired the right of way?

Mr. MARTIN. We did.

Mr. MILLER. Why did not the United States acquire that right of way itself?

Mr. MARTIN. The United States requested us to acquire and pay for it.

Mr. MILLER. And then why did you not acquire it for the United States?

Mr. MARTIN. We were requested to acquire it and take the title in our name.

Mr. MILLER. Who made that request?

Mr. MARTIN. Col. Joyes.

Mr. MILLER. Col. Joyes did not deem it worth while for the United States to have anything down there in its own name, but everything on the property of the Alabama Power Co.; every dollar of this $4,800,000 investment. That is right, is it not?

Mr. MARTIN. That is your interpretation of it.

Mr. MILLER. I am asking you if it is not your interpretation?

Mr. MARTIN. I did not get your question.

(The stenographer read the question referred to.)

Mr. MARTIN. Col. Joyes considered that the interest of the United States was protected when the contract required us to buy the property at fair value.

Mr. MILLER. I will ask you this question: As a matter of fact, every dollar of the $4,878,000 that the Government has put in there, in connection with the Warrior Steam Plant and the transmission line, is on the property of the Alabama Power Co.?

Mr. MARTIN. It is.

Mr. MILLER. Then we have this condition: We have an investment there which is heavier than yours, bearing the relation of five to four, and that is on your property, and we can not sell it to a purchaser who can operate it, and if we do not sell it to you, and the Government keeps it, it has got to take it off of your land. That is the condition of the United States Government, is it not?

Mr. MARTIN. But the Government is protected because it can require us to buy at a fair value, and that was contemplated from the first, that we would stand ready to buy at a fair value.

Mr. MILLER. And the whole thing was so shaped, was it not, Mr. Martin. let us be frank, that when the Government was through using it, there could be nobody that could take over that property but the Alabama Power Co.?

Mr. MARTIN. At a fair value.

Mr. MILLER. At a fair value?

Mr. MARTIN. Yes, sir.

Mr. MILLER. Now, if you were after fair value, why was the wording of this contract so twisted around that nobody could compete against you?

Mr. MARTIN. In the first place, we had the Warrior Station and it was an integral part of our hydroelectric system. If that station was to be extended and we were to obligate ourselves to deliver power from it, and if we were to undertake to extend it for the account of the Government, we could not undertake that if the extension should be separated into another plant. The Government might take the whole plant. It might have taken it all, of course, but if the Government undertook to take it all there were other obligations and conditions which would arise by reason of that. The Government did not undertake to do that. It was not necessary for the Government to take

the station. We could not part with a part of the station. It would disarrange our whole hydroelectric system.

Mr. MILLER. It would disarrange your whole system?

Mr. MARTIN. It would disarrange our whole system because our water-power system must have a steam reserve. This plant was built for that steam reserve. We had many contracts to sell power based on our ability to deliver power throughout the year, this plant supplying the deficiency.

Mr. MILLER. Mr. Martin, we are very familiar with the principle of steam-reserve plants.

Mr. MARTIN. And that accounts for the fact that we could not undertake to separate this property into two stations. It could not be operated as two stations.

Mr. MILLER. The plant was so constructed there, physically, that it could not be separated from your plant.

Mr. MARTIN. It could not be, because the very location of it is such that it can not be separated. There is not physically enough space or square feet of acreage to permit of two plants being operated there. There is not sufficient cooling water. That was a part of the whole situation which the Government officials recognized.

Mr. MILLER. If the war had run along a sufficient amount of time, Mr. Martin, for this accumulated fund to have reached the value of the plant, you say you would have taken over the entire plant and have paid the United States the value of it; is that right?

Mr. MARTIN. If we had paid the United States Government the cost of the property, we would have taken the title to it.

Mr. MILLER. I will ask the reporter to read the question and answer.

(The reporter read the question and answer referred to.)

Mr. MARTIN. My answer is right.

Mr. MILLER. But if the war did not run along long enough for this accumulated fund to amount to anywhere sufficient to meet the cost of the plant, the plant then was to be in such a position that it could not be sold to anybody in the world except you?

Mr. MARTIN. At a fair value.

Mr. PARKER. Mr. Martin, you have stated that this contract was not signed until November, 1918.

Mr. MARTIN. Yes, sir.

Mr. PARKER. Col. Hull, on page 129, calls it a contract of December 1, 1917, and refers to previous statutes. He was asked when that contract was made and answered that it was dated December 1, 1917, and seems not to have understood that it was made in November, 1918. It is a matter of some importance. Have you any correspondence or written statements which show when the contract was really executed?

Mr. MARTIN. We have.

Mr. PARKER. There was no acknowledgment?

Mr. MARTIN. We have, Mr. Parker. I have before me the minutes of the board of directors of the Alabama Power Co. of November 4, 1918, which I will give you.

Mr. PARKER. That is already in the record, on page 168, or the motion authorizing the execution of the contract. There may be something else in the minutes.

Mr. MARTIN. Yes; there is something else in the minutes which I want to read to you. At this meeting of the board of directors, held November 4, 1918, the minutes recite:

"The Chairman then explained the proposed agreement with the United States for the construction of the Warrior extension and transmission line to Sheffield, dated December 1, 1917, and after full discussion of the subject it was, on motion, resolved that the president and vice president, or either of them, is separately authorized to sign and execute on behalf of this company any and all proposals which may be submitted, any contracts, bonds, or other documents relative to any work which is or may be awarded by the United States Government to this company, and also any contracts and bonds with the Government concerning such work."

There is a certified copy of this resolution attached to the contract itself.

Mr. PARKER. A copy of the resolution but not of the recital.

Mr. MARTIN. Yes; not of the recital.

Mr. PARKER. Have you any correspondence which shows that the Ordnance Department at that time asked you to attend to the execution of that contract.

Mr. MARTIN. As late as November?

Mr. PARKER. In November; yes.

Mr. MARTIN. I think we have. I have letters to and from Col. Williams.

Mr. PARKER. They are not here, are they?

Mr. MARTIN. My associate has just handed me one letter.

The CHAIRMAN. This morning, I think, you stated that you had correspondence regarding this matter prior to the time when the formal contract was ratified, and that you agreed to put into the hearings those letters, as I recall.

Mr. PARKER. What does this letter say.

Mr. MARTIN. It is just a letter under date of October 19, 1918, to me from Col. Williams transmitting to me certain articles of the contract which he has rewritten, from articles 1 to 21, with the exception of article 15. He transmits them under date of October 19, 1918. Col. Beames, a witness to the contract, is available and various other witnesses are available. I was present myself when the contract was executed, and both witnesses to the contract can be very readily had. I have here another letter from Col. Williams, dated November 1, 1918, addressed to me at our New York office relative to the contract, sending certain pages of the rewritten contract. It is dated November 1, 1918.

The CHAIRMAN. But, Col. Williams, you said, has gone to Japan.

Mr. MARTIN. Yes.

The CHAIRMAN. So, he is not available to be called before the committee.

Mr. MARTIN. No, sir.

The CHAIRMAN. Could Col. Beames be called?

Mr. MARTIN. Yes, sir.

The CHAIRMAN. I think you gave us his address when you testified this morning?

Mr. MARTIN. Yes, sir.

Mr. PARKER. Now, Mr. Martin, you have stated something about the price of water power in Alabama as given from a report of the Department of Commerce as being in 1917, 2 cents; and in 1912, 1.9 cents per kilowatt; and in 1917, 7 mills per kilowatt. What was it in 1918 or does not that appear?

Mr. MARTIN. That does not appear from the tabulation I have here, Mr. Parker.

Mr. PARKER. It is important to know what a fair price was and I want to know what you were selling power in large quantities for in 1916, 1917, and 1918?

Mr. MARTIN. The average price was between 8 and 9 mills per kilowatt-hour.

Mr. PARKER. To everybody except the Government?

Mr. MARTIN. Yes.

Mr. PARKER. In large quantities?

Mr. MARTIN. Yes; that was the average return we received over our entire system, approximately 8 mills.

Mr. PARKER. What was the lowest you sold power for to any large customer outside of the United States?

Mr. MARTIN. I would have to look that up to see, Mr. Parker.

Mr. PARKER. I wish you would look that up and put in the record all your sales in large quantities. I do not care about any of your small sales to small factories, but this contemplated a very large number of kilowatts.

Mr. MARTIN. Yes; it contemplated the sale of power which we were unable to make from our water-power system without steam addition.

Rates charged by Alabama Power Co. for hydroelectric power supplied to large consumers with service requirements comparable to those of the United States Government at nitrate plant No. 2, (rates are based on hydroelectric and not steam-generated power).

1917, 1918, AND 1919.

(1) 7,500 kilowatts, 50,000,000 kilowatt-hours per year, 6.32 mills per kilowatt-hour;
(2) 15,000 kilowatts, 100,000,000 kilowatt-hours per year, 6.27 mills per kilowatt-hour;
(3) 30,000 kilowatts, 200,000,000 kilowatt-hours per year, 6.26 mills per kilowatt-hour;

1920 AND 1921.

(1) 7,500 kilowatts, 50,000,000 kilowatt-hours per year, 7.24 mills per kilowatt-hour;
(2) 15,000 kilowatts, 100,000,000 kilowatt-hours per year, 7.04 mills per kilowatt-hour.
(3) 30,000 kilowatts, 200,000,000 kilowatt-hours per year, 6.92 mills per kilowatt-hour.

Mr. PARKER. Very true; but I want to know what was a fair price at that time, and you can give us that with all the remarks you choose to make about it. Did it sell in 1919 at a lower or higher rate?

Mr. MARTIN. Our average return?

Mr. PARKER. Yes.

Mr. MARTIN. It was slightly above. It went probably a little more than 8 mills, but was still between 8 and 9 mills.

Mr. PARKER. What was it in 1920?

Mr. MARTIN. There was practically no change.

Mr. PARKER. What is it now?

Mr MARTIN. It is practically the same. There is very little change.

Mr. PARKER. The price you named to the Government was 6½ mills, was it?

Mr. MARTIN. Yes.

Mr. PARKER. Was that price higher or lower than the price you get from other customers who buy in large quantities?

Mr. MARTIN. Considering the fact that it was based on steam, it was lower.

Mr. PARKER. If it was based on water power, how is it in comparison with what you sold power for to other people?

Mr. MARTIN. Our commercial manager tells me there would be very little difference. It would work out between 6 and 6½ mills. It might have worked out a little less than 6½ mills.

Mr. PARKER. You mean in sales to other people?

Mr. MARTIN. You asked me the question whether this quantity of power if sold at our standard rate would be less than 6½ mills. Based on our water-power system it might have been a little less than 6½ mills. I will have to work that out and see.

Mr. PARKER. For the whole year?

Mr. MARTIN. Yes; but would not have been less than 6 mills.

Mr. PARKER. And what was the price of your steam power?

Mr. MARTIN. We had no other contract with anyone based on the delivery of steam power.

Mr. PARKER. And steam power is more or less expensive than water power?

Mr. MARTIN. It is more expensive. We could not deliver steam power at 6½ mills except on a very high load factor.

Mr. PARKER. I understand that the tract of land on which the power plant was erected belonged to you.

Mr. MARTIN. It did.

Mr. PARKER. When did you buy it?

Mr. MARTIN. Either in 1915 or 1916, before we began the erection of our plant.

Mr. PARKER. Do I understand your position correctly to be that you considered the money spent by the Government as advanced to put the plant and lines upon your property which should become yours, if you wished it, and which should be paid for, not at the cost of construction, but at a fair price as a working plant according to its value, when you finally took it over, and with a provision that meanwhile, while the Government got the benefit of the plant and paid for power, they should pay 6½ mills a kilowatt, but deduct 2 mills a kilowatt, and you should pay 6 per cent interest on the cost of the whole plant?

Mr. MARTIN. Yes, sir.

Mr. PARKER. That proposition is a little troublesome, because I understand you do not pay interest at all except when the Government takes power from you.

Mr. MARTIN. If the Government does not take power from us we pay in the form of a mill and a half a kilowatt hour, generated at the station.

Mr. PARKER. That is in the contract?

Mr. MARTIN. Yes, sir.

Mr. PARKER. That is to say, if they do not take from you and you use the plant, you pay 1½ mills per kilowatt hour, you furnishing the expense?

Mr. MARTIN. The thought being that the mill and a half amounts to 6 per cent interest on the investment.

Mr. PARKER. Is that what you are paying now?

Mr. MARTIN. Yes.

Mr. PARKER. Then the payments you are making now are under the same original contract?

Mr. MARTIN. Yes, sir.

Mr. PARKER. What clause is that?

Mr. MARTIN. That is subdivision 2 of article XVII.

Mr. PARKER. Are you using the plant to its full capacity?

Mr. MARTIN. We are at times.

Mr. PARKER. When you are short of water?

Mr. MARTIN. Yes; that is right.

Mr. PARKER. How will a temporary use of that sort amount to anything like 6 per cent interest?

Mr. MARTIN. How would it amount to that?

Mr. PARKER. Yes; a temporary use of that sort. How much did you pay for the use last year?

Mr. MARTIN. During the year 1921 we paid the Government $77,211.61.

Mr. PARKER. That is the interest at 6 per cent on a million and a quarter?

Mr. MARTIN. That does not quite equal 6 per cent.

Mr. CROWTHER. During some of the evidence given this morning a condition arose which was rather regretful, to my mind, inasmuch as it gives a very faint suggestion of some collusion. I want to know whether anything like that existed. During the long period that elapsed between the writing of this contract and the final signing of it, was the legislation you quoted, which was passed in the meantime, for the purpose of validating that contract because previous legislation did not, apparently, measure up to the necessity?

Mr. MARTIN. I knew nothing about the legislation, either that it was pending or passed, until after it passed.

Mr. CROWTHER. It was true that during that period two other acts were passed, between the original writing of the contract and the final signing of the contract?

Mr. MARTIN. Yes, sir.

Mr. CROWTHER. What was the necessity of hurrying it up and then coming in and getting the contract signed?

Mr. MARTIN. It just happened that the contract was ready for execution that day.

Mr. CROWTHER. It was just a coincidence?

Mr. MARTIN. It just happened so; it was a coincidence.

Mr. CROWTHER. Do you know anything about Col. William Williams? What I mean is, he is a New Yorker, is he not? Has he been connected with this New York firm of lawyers for a very long time?

Mr. MARTIN. He is a lawyer of distinction at the bar of New York and has practiced there for 30 years.

Mr. CROWTHER. In New York?

Mr. MARTIN. In New York; yes. He told me of his experience as counsel for the United States in the Behring Strait controversy with Great Britain many years ago. He has had appointments as counsel in many matters of importance that he mentioned to me. I do not recall that I ever had any relations with him before, and I have not had any since.

Mr. CROWTHER. Do you think the contract would be as binding and would be sound if the legislation that you quoted to-day had not been enacted?

Mr. MARTIN. It would have been binding on us to buy.

Mr. PARKER. Would it have granted the privilege to the Government or its officers to sell?

Mr. MARTIN. To agree to sell?

Mr. CROWTHER. Yes.

Mr. MARTIN. I do not think it would.

Mr. CROWTHER. Not until legislation was passed?

Mr. MARTIN. That is correct.

Mr. HILL. Mr. Martin, Mr. Henry Ford has submitted to this committee a proposition for the acquisition of the Muscle Shoals property. The Alabama Power Co., of which you are president, has submitted another proposition dealing with the disposition of the Muscle Shoals property. The questions I propose to ask you and the line of inquiry I am interested in at the present

moment have nothing at all to do with the war activities of the Alabama Power Co. or of Mr. Henry Ford, nor have they anything to do with anything except the bare terms of the contracts or the offers—two separate offers—as they are now placed before this committee.

The CHAIRMAN. At this time the committee decided to take up the objection that the Alabama Power Co. has to the acquisition of nitrate plant No. 2 and the transmission line, the Waco quarry, etc., by Mr. Ford. This morning I suggested—I do not think you were present——

Mr. HILL. I was not present.

The CHAIRMAN. The matter of the Alabama Power Co. will be taken up when the Alabama Power Co. has answered the Ford proposition.

Mr. HILL. Then it is not intended this afternoon that the committee should take up the merits of the Alabama Power Co.'s proposition as bearing on the merits of the Ford proposition?

The CHAIRMAN. No.

Mr. HILL. Then I have not any questions at all to ask to-day.

Mr. WURZBACH. When and how long was Mr. Washburn president of your company?

Mr. MARTIN. He became president of our company some time in 1913; that is my recollection. He continued as president until the annual meeting of our directors in February, 1915. He was president two years.

Mr. WURZBACH. Was he connected with the company in any other official capacity before 1913 or after 1915?

Mr. MARTIN. Yes; he became director and president in 1913, and, as I say, he resigned as president in the early part of 1915, but continued as a director until he resigned in the early part of 1916.

Mr. WURZBACH. Since that time he has had no official connection with your company?

Mr. MARTIN. Not as a director or in any capacity with our company.

Mr. WURZBACH. Is Mr. Duke a stockholder of your company?

Mr. MARTIN. No.

Mr. WURZBACH. Has he ever been?

Mr. MARTIN. He never has been.

Mr. WURZBACH. You stated that the Alabama Power Co. under the contract made with the Government acquired the easements and right of way for about 67 miles of the transmission line; is that correct?

Mr. MARTIN. Yes.

Mr. WURZBACH. What does your company pay for those rights?

Mr. MARTIN. Those rights of way would cost us, including investigation of titles, etc., something like $400 or $500 a mile. They would run between $400 and $500 a mile.

Mr. WURZBACH. That would be how much?

Mr. MARTIN. For the whole distance?

Mr. WURZBACH. No; just the rights you acquired.

Mr. MARTIN. After the Government began?

Mr. WURZBACH. Yes.

Mr. MARTIN. Somewhere between $40,000 and $50,000 would easily cover it.

Mr. WURZBACH. You stated that your company had planned to put in a second unit at Gorgas and had placed orders for that purpose. Why did not your company offer to put in this unit instead of requiring the Government to do it and pay your company a fee?

Mr. MARTIN. Because, in the first place, the unit was not of the capacity the Government wanted. It was only a 20,000-kilowatt unit. In the second place, it was a question of financing; at that time we could not finance it except on Government credit or Government aid. We applied to the War Credits Board, through Col. Jones, for some financing to aid us in going ahead on our own account, which we were unable to get.

Mr. WURZBACH. You do not think you could have done that work at your own expense, with your own financing?

Mr. MARTIN. Not under those conditions.

Mr. WURZBACH. Could you have done it up to the present time?

Mr. MARTIN. Yes; we could have done it.

Mr. WURZBACH. Does your company own any land at the site of the proposed Dam No. 3?

Mr. MARTIN. It does. Our company owns the abutment sites at that dam and some flowage lands.

Mr. WURZBACH. In case of the acceptance of the Ford offer you would be required to convey your holdings to the Government in order for the Government to give good title?

Mr. MARTIN. I assume the Government would undertake to acquire the property in some form.

Mr. WURZBACH. About what is the value of your holdings there?

Mr. MARTIN. I have not expressed any opinion as to the value, Mr. Wurzbach. I would not really like to do that.

Mr. WURZBACH. I think at this point, Mr. Martin, I want to ask you whether your engineers or your directors had in mind a fair value of the property involved in this contract under section 22. I think that is the provision under which you claim an option to purchase from the Government?

Mr. MARTIN. Yes, sir.

Mr. WURZBACH. What is that amount?

Mr. MARTIN. As to what a fair value is?

Mr. WURZBACH. Has your company in mind any amount?

Mr. MARTIN. No; we have not fixed upon any amount. That is subject to arbitration.

Mr. WURZBACH. I understand that; but I suppose you and the members of your company, your officers, have thought about what a fair value for the property would be; have you not?

Mr. MARTIN. Yes; very naturally we have, Mr. Wurzbach.

Mr. WURZBACH. Would you mind stating what amount you had in mind as a fair value for that property?

Mr. MARTIN. Now, you see that question is one which would have to come before the board of arbitration, and very naturally I would hesitate to go into the question now because it is a matter which would naturally come before that board, and I would not care to express an opinion about it now.

Mr. WURZBACH. How does the cost of reproduction at this present time compare with the cost at the time of the construction of this work?

Mr. MARTIN. The cost of reproduction now, our chief engineer tells me, is about 70 per cent of the cost at that period.

Mr. WURZBACH. Seventy per cent of the cost of construction in 1918—I think that is when it was constructed.

Mr. MARTIN. In 1918; yes.

Mr. WURZBACH. After deducting your fee, or the fee that your company received, what would be a fair value, in your opinion?

Mr. MARTIN. I would not like to express an opinion on that. That is a conclusion.

Mr. WURZBACH. Is not that the only fair value that the Government could get for this property, there being no other possible competitors for this particular property?

Mr. MARTIN. Taking into account all the elements which make up fair value, its cost of reproduction is one, and then you would have to consider the question of maintenance and depreciation, and life, etc. All these elements enter into it. Of course, the original cost is one of the elements to be taken into account, and you will see a provision in the contract which requires us to buy it at a fair value.

Mr. WURZBACH. And the production cost was about $5,000,000?

Mr. MARTIN. Yes.

Mr. WURZBACH. Under this contract you would be forced to pay the price that the arbitrators agree upon?

Mr. MARTIN. We would; that is our interpretation of the contract.

Mr. WURZBACH. You conveyed some rights you had at the site of Dam No. 2 to the Government?

Mr. MARTIN. We did.

Mr. WURZBACH. What was the date of that conveyance?

Mr. MARTIN. The date of our letter to the Secretary of War was in February, 1918. We tendered a conveyance to the Secretary of War or the Chief of Engineers, and possibly in a letter we were asked to make some changes in that, and we did make changes in it, and the deed was finally delivered, as I recall, some time in 1920. I have not the exact date before me, but I can get it for you.

Mr. WURZBACH. Have you a copy of the deed?

Mr. MARTIN. I think I have it in town; I have not got it here.

Mr. WURZBACH. About how many acres did that involve?

Mr. MARTIN. I do not recall; I would have to look it up.

Mr. WURZBACH. Was it an absolute deed, with no conditions attached to it?
Mr. MARTIN. No conditions attached to it.
Mr. WURZBACH. Mr. Martin, this contract that is dated December 1, 1917, was, in fact, not signed until November 4, 1918.
Mr. MARTIN. In November, 1918.
Mr. WURZBACH. As a lawyer, what would you consider the true date of that contract?
Mr. MARTIN. The actual date of its execution by the parties.
Mr. WURZBACH. The date of execution and delivery?
Mr. MARTIN. Yes.
Mr. WURZBACH. Most of the obligations, in fact all the obligations involving the construction work, the performance of the work, the actual performance of the contract, except the option, had already been performed by that time?
Mr. MARTIN. Yes; they had practically been performed.
Mr. WURZBACH. Did you draw the contract?
Mr. MARTIN. No; I did not. It is Col. Williams's theory of the contract. Col. Williams redrafted the entire contract when he got into it.
Mr. WURZBACH. You got together and discussed the contract prior to December 1, 1917?
Mr. MARTIN. Yes.
Mr. WURZBACH. I suppose you had duplicate drafts of that contract?
Mr. MARTIN. Yes—prior to its execution?
Mr. WURZBACH. Prior to its execution.
Mr. MARTIN. Yes; there were numerous drafts of it.
Mr. WURZBACH. Have you any of those original drafts?
Mr. MARTIN. We have some of them. I do not know whether they are here or not. I do not think they are in Washington.
Mr. WURZBACH. Would you mind incorporating one of those in the record?
Mr. MARTIN. Yes; I would be glad to do that.
Mr. WURZBACH. Were there any material changes made in that contract between December 1, 1917, and November 4, 1918, when it was actually signed?
Mr. MARTIN. The contract as it was signed was materially different from the contract, naturally, which would have been signed on the 1st of December, 1917, if I get your point. There was no completed contract drafted in 1917. The first time there was any completed contract drafted was some time in 1918.
Mr. WURZBACH. On November 4?
Mr. MARTIN. No. There were drafts of the contract prior to November 4 at different times. You asked me if there were any changes between those dates—that is, between December 1, 1917, and the final draft. I would have to look at the draft to see.
Mr. WURZBACH. You had a draft of the contract on December 1, 1917, did you not?
Mr. MARTIN. No, sir.
Mr. WURZBACH. Then why did you date this contract December 1, 1917, instead of November 4, 1918, when it was actually signed and delivered?
Mr. MARTIN. We began the negotiations with Col. Joyes in November, and all the drafts bore the date of December 1. No one ever thought about changing them; we began the work in December. It never occurred to me but that the principle of law that applied would be that the true date of the execution of the contract would always be proven, and I never questioned the matter of dating the contract at all. This question as to when the contract was executed was never discussed in so far as dating it was concerned. So far as the legal effect is concerned, of course, we executed the contract in the light of the law as it existed, but none of us thought to date the contract without reference to the law as it then existed.
Mr. WURZBACH. You had negotiations with the attorney for the Government before December 1, 1918?
Mr. MARTIN. Oh, yes; frequently.
Mr. WURZBACH. And you drew up some kind of a draft of a contract?
Mr. MARTIN. Yes.
Mr. WURZBACH. On December 1, 1917?
Mr. MARTIN. No; there was no contract drawn in 1917.
Mr. WURZBACH. I thought you said you did have?
Mr. MARTIN. You said 1918.
Mr. WURZBACH. I mean December 1, 1917. That is the date of the contract in the record now?
Mr. MARTIN. Yes.

Mr. WURZBACH. That is the date it bears?
Mr. MARTIN. That is the date it bears.
Mr. WURZBACH. Although it was signed on November 4, 1918?
Mr. MARTIN. On November 9, 1918.
Mr. WURZBACH. When was the contract actually signed?
Mr. MARTIN. On November 9, 1918.
Mr. WURZBACH. And the contract that was signed on November 9, 1918, is dated December 1, 1917?
Mr. MARTIN. That is correct; yes.
Mr. WURZBACH. And you did have some form of a contract prepared about December 1, 1917?
Mr. MARTIN. No, sir; there was no contract prepared then.
Mr. WURZBACH. When did you first prepare a draft of a contract?
Mr. MARTIN. Some time in 1918, Mr. Wurzbach; I could not tell you when. I might be able to tell you by looking at my records.
Mr. WURZBACH. Is that this particular contract that was signed on November 9, 1918, that you say was prepared some time—you thought in August, 1918?
Mr. MARTIN. I wonder if we are speaking about the same thing. There were various drafts of this contract, beginning in the early part of 1918, at different times, with Capt. Noble, the first law officer of the Government. He died and his work was taken up by Col. Williams. Col. Williams changed the entire theory of the contract. It was first drafted in two or three parts, according to my recollection, separate and distinct contracts. Col. Williams changed it to one contract and drafted it entirely over after Capt. Noble died. So there were drafts and drafts of the contract. Those negotiations proceeded until the final form of the contract was agreed upon in November, 1918.
Mr. WURZBACH. At that time, during the year 1918, you were living in Birmingham, Ala.?
Mr. MARTIN. Yes.
Mr. WURZBACH. And Col. Williams was in New York?
Mr. MARTIN. He was in Washington most of the time.
Mr. WURZBACH. I suppose you had considerable correspondence with reference to this contract and as to how it should be drawn and the terms which it should contain?
Mr. MARTIN. Yes.
Mr. WURZBACH. Would you have any objection to furnishing this committee with that correspondence in connection with that contract and place that in the record?
Mr. MARTIN. I shall be glad to do it.
Mr. FIELDS. Mr. Martin, on what date did Mr. Washburn resign his position as director of the Alabama Power Co.?
Mr. MARTIN. In March, 1916.
Mr. FIELDS. You have stated that prior to your entering into this contract with the Government you owned part of the right of way of the transmission line between the Gorgas plant and nitrate plant No. 2. How long before you entered into your contract, Mr. Martin, did you acquire the title to the land on the transmission line?
Mr. MARTIN. Probably from one to two years before. We owned a distribution system in the city of Jasper. We had service to cities, towns, and coal mines and other enterprises, and we had constructed service lines from the Gorgas plant location to those communities, and this right of way was acquired on which to construct those lines. I would have to look up the records to give you a more exact date.
Mr. FIELDS. You have stated that your first contract, written or oral, with the Government for the extension of this plant was about December 1, 1917?
Mr. MARTIN. In December, 1917. There was no written contract.
Mr. FIELDS. I said written or oral, whichever it was.
Mr. MARTIN. It was merely a verbal authorization to build the transmission line as quickly as we could, and on that verbal authority we began the work.
Mr. FIELDS. I suppose you had a good many letters which passed between the Alabama Power Co. and the agents of the Government?
Mr. MARTIN. Yes.
Mr. FIELDS. Which contained provisions of the proposed contract. You evidently had something to start your operations on?
Mr. MARTIN. Yes; we had work orders, and I am going to put those in the record at the request of the chairman.

Mr. FIELDS. How far had you progressed with that work about May 1, 1918, about the time this statute was enacted?

Mr. MARTIN. The transmission line was erected and in operation.

Mr. FIELDS. How far had you progressed with the construction of the addition to that plant?

Mr. MARTIN. The plant was being erected, the apparatus was contracted for, and the steel was being erected, so my chief engineer says.

Mr. FIELDS. I believe you have stated that because of the nature of this construction it would be impossible to unscramble, so to speak, the interests of the Government and the interests of the Alabama Power Co. in this property owned jointly by them. If I remember correctly, one engineer before the committee has stated that it could be unscrambled. Will you explain for the benefit of the committee just why it could not be separated?

Mr. MARTIN. It can be separated in the sense that it can be removed. It can not be separated in the sense that it can remain and form a distinct and separate operation.

Mr. FIELDS. That is the point I wanted you to explain.

Mr. MARTIN. Did you see the pictures of the plant this morning?

Mr. FIELDS. Yes.

Mr. MARTIN. The site is located at the junction of Bakers Creek and the Warrior River. The Alabama Power Co. owns a small acreage at that site in fee simple. Immediately adjoining is the land of a coal company, in which the power company owns the surface interests.

Then we have one water intake, having in view when we constructed the plant that we would, of course, own the plant site. We had no purpose in making two intakes, so we have one intake for the water and one discharge tunnel. The water comes into one tunnel into the power house and serves the needs of the generator we had installed, and then serves the needs, as it passes through the same tunnel, of the other unit. We have coal-handling devices coming from the same common source, and we have ash-handling facilities from the same source. We have one common substation, and the switching apparatus is on one switchboard. The housing facilities are, of course, located in a village. There is no separation; the water employed operates on one side of the plant or on another. We have a small village of houses for the operatives. With the limited acreage, the boiler facilties, the cooling water, and other facilities are so constructed there as to constitute one plant. It was simply made as an extension of an existing, going plant. You can not have two operations in an area so restricted. The question of conflicts will inevitably arise as respects cooling water, as affect the use and handling of those things which come within a closely circumscribed area.

Mr. FIELDS. It would have been possible, would it not, in the construction of the plant to have constructed it so it could have been separated had the Government desired to separate it?

Mr. MARTIN. Not at that location; it could not have been constructed differently at that location.

Mr. FIELDS. I believe you stated that you were ready to furnish the Government power there some five months before the completion of the steam plant at nitrate plant No. 2?

Mr. MARTIN. Some months before.

Mr. FIELDS. Did your company, in its desire to help the Government, propose at any time to construct the steam plant at nitrate plant No. 2 instead of extending your own plant?

Mr. MARTIN. We had nothing to do with nitrate plant No. 2.

Mr. FIELDS. You did not tender your services for the construction of that plant instead of the extension of your plant?

Mr. MARTIN. We had nothing to do with that work.

Mr. FIELDS. Do you not believe that your company, with its intimate knowledge of this character of construction, might have constructed the steam plant at nitrate plant No. 2 with greater speed than it was constructed.

Mr. MARTIN. I would not like to pass on that question. The contract was in the hands of the J. G. White Co. They were among the best engineers in this country, and they had a difficult problem there. They had to begin from the foundation up and create a situation. We had six months' start in the fact that we had water intakes, had the foundations, had a village, had power lines, and everything ready to immediately start construction at Warrior.

Mr. FIELDS. This was the thought that struck me this morning when you were discussing that subject, that with the country at war, and this power

available 88 miles away, which required not only the addition to your own plant but the construction of a transmission line, it seems to me a little strange that your company did not first suggest the construction of a steam plant at nitrate plant No. 2. It seems that nobody gave that matter any thought, but the whole thought was to extend your own plant.

Mr. MARTIN. Mr. Fields, the question of constructing the entire plant there, the entire facilities involved not only months of time, but would also have involved the carrying of coal from the very fields where our plant is erected, 90 miles over a single-track road, which, in the best of conditions is congested, and the Government officials wanted to have two separate plant locations on which they could get power. If they had followed the true economics of the situation they would have erected both plants in the Warrior coal field instead of hauling coal and transmitting the power. But the nature of the conditions was such, the transmission lines, etc., that as a matter of war protection the situation was divided into two plants. The idea was to have a call on our Warrior station, and also have a plant at Sheffield. We had nothing to do with the policy in connection with the matter, of course. That was entirely beyond our province. It might interest you to know that within 30 or 40 days after this work at Warrior began, we received orders to stop the construction. We did not know why, but it was then developed that Mr. Washburn had proposed to the Government that it build a new nitrate plant at Kinsgport, Tenn., and that the Government transfer this entire Warrior equipment to the plant at Kingsport. We knew nothing about it and had nothing to do with it. It was the plan of Mr. Washburn to erect a plant at Kingsport, Tenn. He carried that idea forward and succeeded in stopping the work. Other representatives of the Government took the position that it was to the interest of the Government that this work at Warrior proceed, but that delayed it for ten days or two weeks. That happened in the early part of the work. Mr. Washburn had no connection with our situation and was not acting for us directly or indirectly. I merely mention that so that you can understand the full situation.

Mr. Frederick Darlington was chairman of the power section of the War Industries Board. He is, in part, my authority for this statement; Maj. R. D. Coombs, who is in this room now, is also authority for that statement. He was one of the officers in charge of this work, and I am sure he would be glad to answer any questions you would care to ask him about it.

Mr. FIELDS. You have stated that this company owned the land abutting dams 2 and 3. I suppose it has been a part of the plan of your company to develop the power at Muscle Shoals as your needs would justify that being done?

Mr. MARTIN. We did own a site at dam No. 2, but we transferred it to the Government for $1. We still own property rights at dam No. 3.

Mr. FIELDS. I say I suppose that in connection with this general scheme you entertained the hope that you might be granted a franchise under which you would develop power at dams 2 and 3, as you developed a market for it?

Mr. MARTIN. Of course, to some extent that is the situation. The whole situation at Muscle Shoals was one of long years' standing. Mr. Worthington was in charge of the matter in behalf of our company for many years, until his resignation from our company.

Mr. FIELDS. Of course, you had a perfect right to do that. Now, if in order to meet a great public need or the demands of the Government, it becomes necessary for the Government to develop this or have it developed under some contract, you would not undertake, or you would not regard it as a proper policy to disregard the needs of the Government because they conflict with the interests of your own company?

Mr. MARTIN. Mr. Fields, we have never disregarded the interests of the Government. We transferred property rights at dam No. 2 to the Government for $1. So far as the interests of the Government go, of course, those interests are paramount in the consideration of every patriotic citizen. When that question in its general terms is applied to a specific situation, you have to deal with the situation to which it is applied. I prefer to answer it in that form.

Mr. FIELDS. Your agreement with the Government of 1917 was entered into on the part of the Government by Col. Joyes?

Mr. MARTIN. Col. Joyes represented the Government.

Mr. FIELDS. Then any alterations of or additions to the contract were made by other officers?

Mr. MARTIN. Col. Joyes was in charge of the work of construction from first to last. These gentlemen to whom I have referred were undoubtedly working either with him or under his supervision in that whole situation.

Mr. FIELDS. Was Capt. Noble an emergency officer?
Mr. MARTIN. He was an emergency officer.
Mr. FIELDS. What was his business before he went into the Army?
Mr. MARTIN. He was a lawyer.
Mr. FIELDS. Where?
Mr. MARTIN. He practiced in New York City.
Mr. FIELDS. Was Maj. Coombs a Regular Army officer or an emergency officer?
Mr. MARTIN. He came into the service as an Engineer officer during the war.
Mr. FIELDS. What was his business before that?
Mr. MARTIN. He lived in New York. He was an engineer.
Mr. FIELDS. And Col. Beames was an emergency officer?
Mr. MARTIN. Yes.
Mr. FIELDS. What was his business before he went into the Army?
Mr. MARTIN. He was an engineer, too.
Mr. FIELDS. Where is he from?
Mr. MARTIN. He lives in New York.
Mr. QUIN. Please tell us something about the stockholders of the company of which you are president? Where is the majority of that stock owned?
Mr. MARTIN. Mr. Quin, practically all of the preferred stock of the Alabama Power Co. is owned by some 3,000 stockholders residing in Alabama. The common stock is owned by the Alabama Traction, Light & Power Co. (Ltd.), and about 52 per cent of the Alabama Traction, Light & Power Co. stock is held in this country and Canada and 48 per cent in other countries.
Mr. QUIN. What countries other than this country?
Mr. MARTIN. England, Belgium, the Netherlands, Norway, Sweden—in fact, many of the foreign countries in small lots.
Mr. QUIN. How much of the stock is held in those countries across the water?
Mr. MARTIN. Approximately 48 per cent.
Mr. QUIN. How much do the Canadian interests hold?
Mr. MARTIN. My recollection is approximately 10 per cent.
Mr. QUIN. How much stock does the Alabama Traction, Light & Power Co. (Ltd.) hold?
Mr. MARTIN. That is the stock I was speaking of.
Mr. QUIN. Then, there is 58 per cent held outside of the United States and 48 per cent held across the water, 10 per cent being held in Canada—that is, 58 per cent outside of the United States. Where are these securities floated?
Mr. MARTIN. Are you speaking of stock or of all securities?
Mr. QUIN. I am speaking of stock.
Mr. MARTIN. That is approximately it.
Mr. QUIN. You have answered in reference to the stock. I want to know about your other securities. You issue bonds, do you not?
Mr. MARTIN. Yes.
Mr. QUIN. What percentage of your bonds are held outside of the United States, and other securities or evidence of indebtedness?
Mr. MARTIN. Taking it as a whole, there is about 63 per cent of all our securities in this country and 37 per cent out of this country; that is approximately correct.
Mr. QUIN. That is outside of the United States?
Mr. MARTIN. Yes; 63 per cent in this country and 37 per cent abroad; that was almost a complete reversal of the condition which existed in 1914.
Mr. QUIN. You stated that your predecessor, Mr. Mitchell, was the president of this company. He was born in England, was he not?
Mr. MARTIN. No, sir; he was born in Canada. He was a citizen of Massachusetts from his early boyhood and continued to be until his death.
Mr. QUIN. Was he naturalized?
Mr. MARTIN. Yes—he was either naturalized or born of American parents.
Mr. QUIN. You are a native-born citizen of Alabama?
Mr. MARTIN. Yes, sir; born in Judge Almon's district up near Muscle Shoals.
Mr. QUIN. The question of this contract being dated the 9th of November, 1918, is purely one of the record of the date of the signing of that instrument, is it not, so far as the contract is concerned? It had been in force and effect since the 1st day of December, as I understand it.
Mr. MARTIN. We had been operating under either verbal or written instructions; they did not rise to the dignity of an agreement. But letters had passed in the nature of work orders, modified from time to time to meet the progress of the work. Those understandings or relationships culminated in this contract in November, 1918.

Mr. QUIN. Mr. Martin, it is hardly probable that a contract of that magnitude would have been entered into by your company without an understanding, because you did start on the work in 1917?
Mr. MARTIN. To the contrary, Mr. Quin, our company entered upon it without any specific understanding, simply because the Government wanted us to build the transmission line and get power for its purposes. The question of a contract was naturally one to come up later, as in the case of thousands of people who had arrangements with the Government of one kind or another to supply it with equipment and products to be used in the war. The question of contract was one of secondary importance and so considered by everyone. The main question was to do the work and get the results the officers of the Government wanted.
Mr. QUIN. It was understood that the Government was to finance that work, and a fee, as stated by you, was to be paid by the Government; your company was to do the work. That was clearly understood, was it not?
Mr. MARTIN. The two fundamentals were that the Government would finance the work and we would agree to buy the plant upon the demand of the Government at a fair value.
Mr. QUIN. Those were the fundamentals in there in 1917, were they not?
Mr. MARTIN. When we began, yes, sir.
Mr. QUIN. You know what a contract is; you are a lawyer. Your minds were bound to come to a meeting before you entered upon any such big job as that.
Mr. MARTIN. To that extent, yes; as to how it should be worked out, that was left to a detailed contract.
Mr. QUIN. State exactly, as near as you can, all that was understood between your company and the Government at that time, in December, 1917.
Mr. MARTIN. Well, in the first place, we were to undertake the construction, immediately and in advance of the other work, of the transmission line—and that was settled first—a transmission line over which the Government could obtain power at Muscle Shoals. This transmission line was to have a capacity of 30,000 kilowatts. The question was to get that line built, leaving to the future the determination of how much power the Government would take out of our system to meet its needs at that location. We were asked to expedite the construction of that transmission line with all speed. We did undertake at the Government's request to do it, and we started our men working, by telegraphic orders, largely at our own expense, before there was any definite arrangement for obtaining money from the Government, and we financed it for a considerable period. That work went forward and the discussions also went forward with Maj. Coombs and Col. Joyes as to what could be done to give the Government a source of power amounting altogether to 30,000 kilowatts from our system. There was no authority in the Government at that time to agree to sell us this extension. There was corporate authority in our company to agree to purchase on the demand of the Government at a fair value. So the fundamentals as finally accepted were that we would purchase at a fair value on the demand of the Government and the Government would finance the extension.
Mr. QUIN. That was understood in 1917, that feature of it, in December, 1917.
Mr. MARTIN. Yes, sir; that feature of it.
Mr. QUIN. And alone you could not have embarked upon such a proposition?
Mr. MARTIN. We could not have embarked upon the financing of it.
Mr. QUIN. You could have done the work upon the cost-plus plan, but you do not believe the Government would put all that money on the property of the Alabama Power Co. without an understanding, do you? And they did not do it without an understanding, and that understanding was in December, 1917?
Mr. MARTIN. Yes.
Mr. QUIN. And when that understanding was brought about, was there any written evidence of it?
Mr. MARTIN. Simply the work orders.
Mr. QUIN. Was there no kind of a drafted document of the War Department, or some branch of the War Department?
Mr. MARTIN. Not in December.
Mr. QUIN. No kind of documentary evidence made by the Government? Were those War Department officers so derelict and negligent as not to have some kind of a memorandum or writing?

Mr. MARTIN. I can not say they were derelict at all. They wanted the results; they wanted the power. The question of the terminology of a contract was secondary. They were willing to go ahead and start a program and they were willing to consider our agreement verbally as binding us, as it did bind us, and we did agree upon it finally.

Mr. QUIN. That was an agreement which terminated in the expenditure of about $5,000,000?

Mr. MARTIN. Yes.

Mr. QUIN. Without any kind of a written agreement or memorandum or anything on the part of the Government?

Mr. MARTIN. Work orders and our acceptance of them.

Mr. QUIN. No kind of a written instrument or memorandum filed in the Alabama Power Co.'s office?

Mr. MARTIN. These work orders and our acceptance of them.

Mr. QUIN. Is there anything stating a conclusion reached by these verbal or telephonic communications of record?

Mr. MARTIN. There may be; I will have to look that up for you.

Mr. QUIN. If you have anything of that kind I wish you would put it in the record.

Mr. MARTIN. I will be glad to do so.

Mr. QUIN. You started to work about what date?

Mr. MARTIN. December 14.

Mr. QUIN. 1917?

Mr. MARTIN. Yes.

Mr. QUIN. How much of that work was completed on the 9th day of November, 1918?

Mr. MARTIN. It was largely completed. The transmission line had long been completed, and our chief engineer reminds me that 95 per cent was completed.

Mr. QUIN. How much, approximately, of the $5,000,000 had been expended?

Mr. MARTIN. I can not say how much of those payments had been made at that time. You would have to get that from the Government officials.

Mr. QUIN. Your records would not show that?

Mr. MARTIN. I can not say that the records would show the exact expenditures because there was a disbursing officer of the Government acting under Maj. Coombs, who controlled that question.

Mr. QUIN. At the time of the signing of the armistice you had about completed the building?

Mr. MARTIN. That is correct.

Mr. QUIN. You did not have the machinery installed?

Mr. MARTIN. Yes; I think the machinery was installed; it was practically ready to run.

Mr. QUIN. Before you began the Government work you had constructed a building about 100 by several hundred feet?

Mr. MARTIN. I do not remember exactly; it was half the size of the building you saw in these pictures.

Mr. QUIN. And the building you constructed for that purpose for the Government was the same size, practically?

Mr. MARTIN. It is a little larger.

Mr. QUIN. The machinery that the Government unit had was, of course, of a stronger type, and put up on a more expensive basis?

Mr. MARTIN. It was a larger unit.

Mr. QUIN. And was worth more money?

Mr. MARTIN. It cost more money than ours did.

Mr. QUIN. What land did you own there at the time you started the Government work, as near as you can recollect?

Mr. MARTIN. We owned 20 or 30 acres of land in fee, and possibly 50 acres or 75 acres of surface.

Mr. QUIN. Do you own any more than that now?

Mr. MARTIN. Yes.

Mr. QUIN. When did you acquire it, what year?

Mr. MARTIN. We extended our surface title, I think we acquired the remainder—we own 100 acres of surface title; that is my recollection.

Mr. QUIN. About what year?

Mr. MARTIN. Either 1917, 1918, or 1919; I do not remember, Mr. Quin.

Mr. QUIN. It must have been after this contract with the Government.

Mr. MARTIN. It is very likely.

Mr. QUIN. You said you had at that time 30 acres?

Mr. MARTIN. We had 20 or 30 acres in fee simple, and we had the surface title on 50 acres additional. There was a coal-mining company in which we had an interest, and there were other interests in the coal mining company, and we acquired part of the surface title from the coal company, and later acquired additional surface title from the coal company to enable us to properly police the village and to make additional improvements in the camp. We own 100 acres, as I recollect now.

Mr. QUIN. After the armistice was signed, the Government constructed some railway or electrified some railway, did it not?

Mr. MARTIN. From the very first there was a program of constructing what is known as the Drifton Railroad extension. That is an extension of the Southern Railway line from where it stopped some distance from this plant down to this plant, the idea being to get additional sources of coal supply to the plant, in case there should be an interruption of a supply of power to the plant.

Mr. QUIN. That was constructed after the armistice, was it not?

Mr. MARTIN. It was completed after the armistice. The Government agreed to advance $30,000 for the construction of that road and we advanced the balance; we advanced $105,000 over the $30,000 advanced by the Government.

Mr. QUIN. Then, after the armistice was signed the hammer and saw were busy until the spring of 1919, by the Government and with the Government's money?

Mr. MARTIN. I do not recall now. There were some men there, there were a few men there, but the work was practically completed. We completed the railroad and the Government simply advanced some money. That was an expensive operation.

Mr. QUIN. Did you not complete those houses after the armistice was signed; that is, for the offices of the company, and for the men to live in?

Mr. MARTIN. There was some finishing of the houses, I imagine. I do not know that there were any more houses built. The chief engineer tells me there were not. These were operatives' houses, of course.

Mr. QUIN. The War Expenditures Committee went down there, did they not?

Mr. MARTIN. No, sir; I am very sorry to say, Mr. Quin, that the War Expenditures Committee did not go down there. I think they would have handled this whole situation differently if they had gone. They would have seen what it was and would have been better able to appreciate the entire situation which confronted us down there at that time.

Mr. QUIN. Then they were in error when they said in their report that irrespective of the armistice the work was pushed rapidly, and the entire installation was made and work not stopped until in April, 1919?

Mr. MARTIN. They were in error in making a general statement of that kind. We have answered that statement, all of those stitements, in a written memorandum, which is now in the Congressional Record. This Committee on War Expenditures did not go to that place, and gave us no opportunity to appear before it. We knew nothing of their report until it was filed, and I asked Senator Underwood to spread our answer upon the Congressional Record, and now that you have introduced the Graham report. I am going to ask leave of the chairman to file as a part of this proceeding our answer to those proceedings and to that report.

Mr. QUIN. You say it is already in the record?

The CHAIRMAN. Of course, this committee is holding its own investigation. Mr. Graham's committee may have made findings about your company, but I do not think this committee has anything to do with that.

Mr. MARTIN. That is correct, but some one has already introduced into these hearings the Graham report, so far as it deals with this company, and it is now a part of this record.

The CHAIRMAN. I do not recall that the Graham report was made a part of this record.

Mr. MARTIN. Then may I take the liberty of referring specifically on the record to our answer to those charges or criticisms in the Graham report?

The CHAIRMAN. I frankly do not believe the Graham report is a part of the record of this committee. Therefore, there is nothing to answer.

Mr. MARTIN. I simply wanted to refer to the Congressional Record, wherein it is contained.

The CHAIRMAN. I do not think this committee ought to take up that matter.

Mr. DENT. Mr. Chairman, I think you misunderstood Mr. Martin. All he wants is for the reporter to note where the answer to the Graham report appears in the Congressional Record, giving the date and page number of the Congressional Record.

The CHAIRMAN. I have no objection to that.

Mr. MARTIN. The answer is contained in the Congressional Record at page 1275 and following, under date of January 10, 1921.

Mr. FIELDS. In whose remarks?

Mr. MARTIN. They were offered in the Senate by Senator Underwood, and they were offered at my request in a telegram, which is also set out in this record.

Mr. QUIN. They spoke of a turbogenerator being furnished at a cost of approximately $2,000,000, installed after the armistice?

Mr. MARTIN. No; it was installed before the armistice; 95 per cent of the work was completed at that time.

Mr. QUIN. When was it tested? They say it was tested in December, 1919.

Mr. MARTIN. It was tested on Thanksgiving Day, 1918, and the test went into December and into January. Then the machine was not found satisfactory and it was taken down and some of the parts were returned to the factory. The machine remained down for months. Then the machine was restored to its original condition and was tested again and more trouble developed, and it was not until May, 1919, that the machine was pronounced in order and all testing correct. These changes were made by the manufacturers. The troubles were due to the character of steel which they were able to obtain at that time, and it was not of sufficient tensile strength to meet the severe tests of that character of operation.

Mr. QUIN. Did your company carry on the supervision of the work by the Government after the armistice?

Mr. MARTIN. The supervision of the work?

Mr. QUIN. Yes; or did you do it?

Mr. MARTIN. The Government had an agent there.

Mr. QUIN. Your company did the work and the Government supervised it?

Mr. MARTIN. Yes.

Mr. QUIN. They had officers there for that purpose?

Mr. MARTIN. They had Maj. Coombs, Capt. Stiles, Capt. Hemphill, and several other officers were stationed there.

The CHAIRMAN. Were they emergency officers or Regular officers?

Mr. MARTIN. They were all emergency officers.

Mr. QUIN. What work was done with Government money in addition to this building, and equipping the building and putting up those houses?

Mr. MARTIN. There was the equipment of the stations.

Mr. QUIN. Equipping both stations or only one?

Mr. MARTIN. No——

Mr. QUIN (interposing). The equipment for this one big station?

Mr. MARTIN. For this extension.

Mr. QUIN. All those buildings built for residential purposes and the completion of the transmission line?

Mr. MARTIN. Yes; the transmission line.

Mr. QUIN. What else?

Mr. MARTIN. I do not recall anything except the substations. There was an extension of our substation.

Mr. QUIN. What substations were finished with the Government's money?

Mr. MARTIN. The Warrior station was enlarged to meet the requirements. In order to transmit this power we have to generate it at one voltage, 6,600, and we step it up to 110,000 volts and transmit it, and to step it up you have to have a layout in a substation consisting of transformers and switches, and things of that kind.

Mr. QUIN. Where is that substation?

Mr. MARTIN. Right at the plant. The transmission lines run out of the plant into the station and go through transformers, where the power is stepped up to the transmission voltage and transmitted to the point where it is to be used, and at the other end it is reduced again through a transforming station to the voltage required.

Mr. QUIN. How many dollars were invested there by the Government, approximately?

Mr. MARTIN. At this location, $3,500,000.

Mr. QUIN. Where was that other money spent?

Mr. MARTIN. Part of it was in the transmission line to Sheffield and the other part was in the substation at Sheffield.

Mr. QUIN. Was the balance of the $3,500,000 in the plant itself?

Mr. MARTIN. It is set forth in the statement sent to this committee by Secretary Weeks. That shows that there was $3,400,000 in the Warrior generating station, $383,000 in the Warrior substation; in the transmission line——

Mr. QUIN (interposing). That is the transmission line to Muscle Shoals?

The CHAIRMAN. Are you reading from one of the statements made before the committee?

Mr. MARTIN. Yes.

The CHAIRMAN. It is all in the record.

Mr. QUIN. I want to get the amount of money actually put in the plant and transmission line.

The CHAIRMAN. That is in the record.

Mr. QUIN. I wish you would tell me what amount you have in the plant, not counting your land, in the buildings and equipment, as near as you can approximate.

Mr. MARTIN. I think I stated this morning it was $3,000,000.

Mr. QUIN. I thought that included your land holdings.

Mr. MARTIN. You can not separate land from the rest of it.

Mr. QUIN. You have approximately $3,000,000 invested at that point in your own money?

Mr. MARTIN. Yes, and in addition to that we have various properties which we acquired in connection with this same situation.

Mr. QUIN. And the Government has in all $5,000,000 in that property and the transmission line, as I understand it, and you have $3,500,000 in those plants?

Mr. MARTIN. No; our investment there in connection with this Warrior plant is a part of the system which represents some $35,000,000 of investment by our company.

Mr. QUIN. I understand that; but I want to get into the record the exact amount at that point.

Mr. MARTIN. In addition to this plant forming a part of our system, if you can segregate it, which I do not believe you can, because the system has to be balanced up, and it is balanced with this steam plant reserve, the steam plant reserve represents something in excess of $3,000,000. In addition to that we expended approximately $1,000,000 for various items which I enumerated this morning in connection with this work, and that makes more than $4,000,000; but you can not segregate that from the system because there are other investments in the system, dependent for their value and usefulness upon this Warrior station.

When you get into that question as to the investment which is really dependent upon this station, you get into a very large question.

Mr. QUIN. What is the matter with the Government taking that second unit and building its own transmission line to Muscle Shoals?

Mr. MARTIN. Why can not the Government do it?

Mr. QUIN. Yes.

Mr. MARTIN. Of course the Government can do it if it does not want to carry out its contract with us.

Mr. QUIN. I am not discussing that feature of it.

Mr. MARTIN. Leaving outside the contract?

Mr. QUIN. Yes; I am taking it as a business proposition. As a physical possibility the Government can do that. There is a big building and equipment there and the Government could complete the transmission line to Muscle Shoals as well as you could?

Mr. MARTIN. Yes.

Mr. QUIN. You built 68 miles of that on Government money, and it is on your land?

Mr. MARTIN. Yes; but it would cost the Government a good many hundreds of thousands of dollars to take that equipment and erect a new station, because the Government is using our facilities, foundations, intakes, ash-handling facilities, lands, coal, houses, and various things, substations and all those things have to be taken into account when you undertake to set up a new layout for a plant. You have got to start on the foundation in getting a plant. If you want to take this equipment, I do no know how much more it would cost you.

Mr. QUIN. As a matter of fact, Mr. Martin, the United States Government owning a majority of the investment there, has the vested right, under the Constitution, under condemnation proceedings to acquire your interests if you could not arrive at an amicable adjustment; as a legal proposition it could do that; could it not?

Mr. MARTIN. I can not accept your premise.

Mr. QUIN. The Government has the right, under the Federal Constitution to condemn property.

Mr. MARTIN. The Government has the right to take private property for public use upon paying just compensation.

Mr. QUIN. Then the question involved is purely one of whether or not the Ford proposition is pro bono publico, and what the value of that property would be, so far as the Constitution is concerned? I would like to have you answer yes or no to that question.

Mr. MARTIN. I can not answer yes or no on that hypothesis.

Mr. QUIN. All right; I will take your way of answering it.

Mr. MARTIN. When you come to treat this question you must remember that it is a public utility engaged in serving sixty-odd towns and cities in Alabama. It has obligations to thousands of people. We have 20,000 direct and probably 40,000 additional consumers. You have to remember the service you are dealing with. It is not private property in the ordinary sense of private property, and you have to remember that this station is a part of a big hydroelectric system for the purpose of enabling that company to better serve the public by rendering service throughout the year, service which they could not get through any other hydroelectric station without this reserve. A large part of this business is founded on the delivery of power throughout the year. The company has the right to make those contracts, and it has those obligations to others growing out of its very relationships. When you come to consider those questions, as to what the compensation will be, as to the right of the United States to take property, I will not undertake to express an opinion upon that question. I am merely giving you the facts. You are a lawyer; you can draw your own conclusion.

Mr. QUIN. I have a very definite conclusion on that.

Mr. MARTIN. I simply wanted you to know the facts.

Mr. QUIN. If the Government exercised the right of eminent domain there would be no physical impossibility, although great inconvenience for your company, to erect another plant similarly located for that purpose.

Mr. MARTIN. Mr. Quin, when you come to deal with that question——

Mr. QUIN (interposing). Can you answer that question yes or no? You know the location down there?

Mr. MARTIN. No; it is not physically feasible without going to an entirely new location. Then you have to build a new transmission line, buy new rights of way, and bring this power from a new station to load centers; you have to build a new substation, and you have a great many problems which you meet with. There are lines that radiate out of this station. This is the coal district of Alabama. We have 40 or 50 coal mines operated with electric power from our company. We furnish power for the operation of industries of various kinds, and all that would be disarranged and would have to be rearranged if you say we must close this station and build another. How are you going to do it?

Mr. QUIN. You can operate this until you get the other one built. There would be a way found to keep you from losing that. There would be no trouble except the expense the Government would pay, and the great inconvenience to your company.

Mr. MARTIN. And to the public.

Mr. QUIN. Does not the Government sometimes condemn and take a person's home? Even a railroad can do that, and you have the right under the law, as a public-service corporation, to go through any man's field.

Mr. MARTIN. We have certain limitations upon the right to condemn.

Mr. QUIN. Public-service corporations of the United States have that right, and the Government certainly reserves that right which it has against public-service corporations or private individuals.

Mr. MARTIN. Of course, the Government has the right under the Constitution to take private property for public use upon paying just compensation. But when you analyze that provision and apply it to a situation like this, there are presented other problems which appeal to you as they do to me, and which I will not attempt to pass on now.

Mr. QUIN. The Ford proposition does not appeal to your company, as I understand it?

Mr. MARTIN. I think that is a problem for the committee to pass on, if you will pardon me.

Mr. WRIGHT. Mr. Martin, do you understand that there is any difference between the term "fair value" and the term "fair market value," or are they synonymous?

Mr. MARTIN. In the law relating to such situations as this, I think there is possibly a difference. Fair value, Mr. Wright, you will find is the basis or term used in the decisions of the Supreme Court of the United States when it comes to fixing value in rate-making cases; it is the fair value of the property. You may consider market value, although I am not prepared to say whether the question of market value enters into it. "Fair value" is the term used in the rate cases.

Mr. WRIGHT. Being a lawyer, I would like to ask you what, under the terms of the contract, you would consider the term "fair value" to mean. Suppose a board of arbitration should be appointed under the terms of the contract to assess a fair value which your company is to pay for this development there. What measure would they adopt, what elements would enter into it, applying the words "fair value" to this peculiar situation?

Mr. MARTIN. One of the questions to be looked at is the original cost, and the question of the reproduction value. Then there would be the question of the condition of the property itself; then the question as respects its age, the very nature of the property, its value in public service—there are a great many elements of that kind to be considered.

Mr. WRIGHT. Fair market value means usually what a given piece of property would bring if offered by an owner who would sell but was not obliged to sell, and was purchased by a purchaser who would purchase but was under no necessity of buying. Is not that a fair definition of fair market value?

Mr. MARTIN. Possibly; a willing buyer and a willing seller.

Mr. WRIGHT. Yes; with no necessity on the part of either one. The owner would sell but he is not obliged to sell, and some other man would buy but he would not be obliged to buy.

Mr. MARTIN. In this contract both the buyer and the seller are named. Each of the parties has agreed with the other, one to buy and the other to sell, and the only problem left is the determination of the amount.

Mr. WRIGHT. I want to get at what elements would enter into that, and you have told me that.

Mr. Martin, the fact that under this contract, as you just said, there can be one seller and one purchaser would of itself limit the value of the property, would it not?

Mr. MARTIN. I have not so interpreted it.

Mr. WRIGHT. In other words, there is nobody in the world situated like your company with reference to this property down there?

Mr. MARTIN. That is why we use the term fair value. That insures the Government a fair valuation at the hands of the arbitrators.

Mr. WRIGHT. Would not that be taken into consideration—that is, the fact that there can be only one purchaser and only one company or individual who can use the investment the Government has made?

Mr. MARTIN. I do not believe it would, under the terms of a fair valuation.

Mr. WRIGHT. Would not that be an element of the probable use to which the property could be put?

Mr. MARTIN. No one can put it to a greater public service use than a company such as ours. It is the highest form of use.

Mr. WRIGHT. Take a piece of real estate. It might be adapted to the construction of storehouses or it might be peculiarly suited for residential purposes. That would be an element of value. One piece of real estate might be adapted to a great many different uses which would enhance the commercial value of it. Is it not a fact that the uses to which any given piece of property could be put largely affect its market or fair value?

Mr. MARTIN. It might affect one and not the other.

Mr. WRIGHT. As to this particular piece of property, it is so developed that the Government can make but two uses of it; one is to sell it to your company and the other would be to move it away.

Mr. MARTIN. That was inherent in the situation from the beginning.

Mr. WRIGHT. If I understand your contract, it is limited to those two elements of value.

Mr. MARTIN. That is why we obligated ourselves to buy on the terms mentioned in the contract, because that was the situation.

Mr. WRIGHT. So it stands on a very different footing from an ordinary piece of property in the hands of the Government or anyone else when it comes to the matter of sale?

Mr. MARTIN. The Government either owned property which it could not sell to some one else, or——

Mr. WRIGHT (interposing). I understand the contract; I want to get the peculiar situation.

Mr. MARTIN. You have to consider all the elements in discussing it.

Mr. WRIGHT. Mr. Martin, how many dam sites or dams does your comapny own in northern or western Alabama?

Mr. MARTIN. We simply own these two at Muscle Shoals. I think we have two on a small creek in Jackson County.

Mr. WRIGHT. How many have you developed?

Mr. MARTIN. We have developed in our system one at a point known as Jackson Shoals and another on the Coosa River. We are in process now of developing, and we are actually constructing another development, on the Coosa River to have 110,000 horsepower capacity. That is being constructed under the terms of the Federal water power act. That is in course of construction and will be in service at the end of the year. We have been ready and waiting on Congress for a good many years to pass legislation under which we could develop water powers.

Mr. WRIGHT. Are there very many desirable water powers in that section aside from the ones you own?

Mr. MARTIN. There are a great many water powers in Alabama, small and large.

Mr. WRIGHT. I mean those of any consequence. The one on the Coosa River and the one on the Tennessee River are the principal ones in that section?

Mr. MARTIN. Yes.

Mr. WRIGHT. Who owns those?

Mr. MARTIN. We own the ones I referred to.

Mr. WRIGHT. Those are the principal dam sites or power sites?

Mr. MARTIN. Those two are.

Mr. WRIGHT. Mr. Martin, you say your company acquired the abutments on dam site No. 2. Was that property acquired at one time or in separate parcels?

Mr. MARTIN. It was acquired at different times. The Muscle Shoals Co. that owned the title was organized in 1906, and from then on for a period of a good many years the company acquired rights and property.

Mr. WRIGHT. From time to time?

Mr. MARTIN. Yes.

Mr. WRIGHT. I am speaking about the key to the situation—the dam-site property.

Mr. MARTIN. Some time probably in 1912.

Mr. WRIGHT. That your company purchased?

Mr. MARTIN. This company purchased? The people who now own or control the situation, the present stockholders, had no interest in the Muscle Shoals Co. prior to 1912.

Mr. WRIGHT. You mean to say it was first purchased by a water power company?

Mr. MARTIN. By some citizens of Alabama.

Mr. WRIGHT. Called the Muscle Shoals Co., and your company purchased from them?

Mr. MARTIN. Purchased the stock of the Muscle Shoals Co.

Mr. WRIGHT. Which carried with it——

Mr. MARTIN (interposing). The properties it had.

Mr. WRIGHT. That was in 1912?

Mr. MARTIN. Yes. We took over the stock of that company in 1912. Mr. Worthington had been in active charge of that company's work for many years and was president of that company until March, 1920.

Mr. WRIGHT. That property was acquired—that is, the site and the flowage rights—at an expense of about half a million dollars?

Mr. MARTIN. We had expended about half a million dollars on the No. 2 site.

Mr. WRIGHT. What did you do?

Mr. MARTIN. We purchased the lands. We had been carrying the property from 1906 up to the time of this development.

Mr. WRIGHT. You made no development; you simply own the property?

Mr. MARTIN. Own the property.

Mr. WRIGHT. Now, without in the slightest questioning your generosity or patriotism, Mr. Martin, will you tell the committee just the consideration which prompted your company to donate this site to the Government? Do you mean to tell the committee it was intended purely as a voluntary gift to the Government, just an outright donation to the Government, without any return to your company or any prospect of any advantages accruing to the company? I just want to know about that.

Mr. MARTIN. That letter I read to you——

Mr. WRIGHT (interposing). That is a splendid letter; the sentiment is fine and well expressed.

Mr. MARTIN. I did not write it, but I thank you for that, anyway.

Mr. WRIGHT. You are quite capable of writing one as good.

Mr. MARTIN. The letter speaks for itself. We were asked by numerous citizens of that district to make a donation to encourage development, and we did. It was made at the time the Government was engaged in a war program. It was not an industrial program upon which the Government was engaged, it was a war program.

Mr. WRIGHT. Just coming down to this proposition as man to man, you are an Alabaman and I am a Georgian; of course, in this Great War there were a great many sacrifices made on the part of men and women, even to the supreme scrifice. Women all over the country deprived themselves almost of the necessities of life; their food in some instances was short; they did not have enough sugar or wheat bread all the time. There were sacrifices made and deprivations on the part of the people everywhere, and ultimately a great many of them made the supreme sacrifice. We all understand that.

Do you know of any companies over this country who did work for the Government in the construction of cantonments or any other enterprises who contributed those things to the Government?

Mr. MARTIN. Contributed what?

Mr. WRIGHT. Do you know of any who made contributions?

Mr. MARTIN. Of property such as this?

Mr. WRIGHT. Yes.

Mr. MARTIN. I think it was very rare.

Mr. WRIGHT. Does not your case stand out singly and alone during the whole war as the only company which made a literal donation of a piece of property worth half a million dollars?

Mr. MARTIN. I will go further, and say the property is worth a great deal more than half a million dollars.

Mr. WRIGHT. It cost you that?

Mr. MARTIN. Its value is more than that.

Mr. WRIGHT. Then, keeping in mind the fact that the country has never been considered insolvent, but has always been able to pay its obligations, and did pay handsomely during the war, there was no limitation upon the conduct of the war, so far as money was concerned—I want to know whether you tell me, man to man, that your company simply made this voluntary donation to the Government without expecting any reward or hoping for any development that would be made there, but just parted with it without any thought of anything like that?

Mr. MARTIN. I mean to tell you we made the donation and the deed, and I mean to tell you also that in the making of the deed we discussed it with everyone who had any interest in the situation in Washington. It was the unanimous feeling at that time that in the progress of this development there should be a surplus of power for governmental purposes, which would reach the public over transmission lines such as ours. That was expressed in the letter I read this morning. That was the situation on one side.

Mr. WRIGHT. The further fact is, Mr. Martin, that the Muscle Shoals Co. had exploited this property and tried to finance it for many years.

Mr. MARTIN. I would not express it just that way.

Mr. WRIGHT. They wanted a development made there, they sought some interests which would finance it, and they had not succeeded.

Mr. MARTIN. It was not financed; that is correct.

Mr. WRIGHT. Mr. Martin, it is no secret, is it, that for many, many years it was extremely difficult in the South to finance a water-power proposition?

Mr. MARTIN. Yes; it was difficult, but at the same time our company was ready to act, to have the project financed, and an act passed Congress, but President Taft vetoed it. At different times since then our company has been in a position to finance water-power development. We are now financing a development which will cost us about $9,000,000.

Mr. WRIGHT. It is easier to finance one now with your holdings and the business you have worked up, than it would be for a pioneer?

Mr. MARTIN. It is quite different now.

Mr. WRIGHT. Mr. Martin, you spoke a few moments ago about this property being conveyed to Mr. Ford. Of course, that is not the contention. Under the Ford offer the property goes back to the Government at the end of 100 years, if he should lease it from the Government; that is, Dam No. 2. I wanted to get the record straight on that. It would not be conveyed to Mr. Ford.

Mr. MARTIN. I do not know what the situation is about that.

Mr. WRIGHT. Speaking about your contract, the work under the contract was practically completed before the contract was really executed?

Mr. MARTIN. It was.

Mr. WRIGHT. I think you have explained about what was going on in the meantime, but the fact remains that the contract was not executed until the work was completed?

Mr. MARTIN. Yes.

Mr. WRIGHT. Mr. Martin, going back to the donation of the dam site, when your company came to construct this Warrior River steam plant, you did not even donate your services in doing that, did you? I am not criticizing you; I think you ought to have been paid for it.

Mr. MARTIN. If you examine the situation first and last, you will find that we came out rather on the financial bad side of it.

Mr. WRIGHT. That may be true in connection with the matter of taxation. But you were to get a fee of $220,000, and did get it.

Mr. MARTIN. Yes; but it did not cover our losses or our expenses.

Mr. WRIGHT. The Government financed it all the way through?

Mr. MARTIN. Yes.

Mr. WRIGHT. In addition to the fee you received, there is embodied in the contract the right to purchase?

Mr. MARTIN. At a fair value.

Mr. WRIGHT. You said the only two rights the Government would have would be to sell the property or move it, and it would be ruinous to the Government to undertake to move that investment.

Mr. MARTIN. Yes; and I can not say that it was ever contemplated.

Mr. WRIGHT. That would be reckless?

Mr. MARTIN. In my judgment, it would.

Mr. WRIGHT. In other words, it would be practically a loss for the Government to undertake to move that, including the buildings and machinery?

Mr. MARTIN. I am sure the Government would come out better if it undertakes the arbitration in accordance with the contract and permits us to go forward in accordance with the contract and buy, than if it undertakes to remove the property.

Mr. STOLL. Is it not a fact, Mr. Martin, that the people of Alabama are very hostile to the Alabama Power Co.?

Mr. MARTIN. Mr. Stoll, there are many people in Alabama who take the view that this power at Muscle Shoals should be developed and distributed by the Alabama Power Co. There are thousands of people who believe that. There are, on the other hand, thousands of people, no doubt, who think Mr. Ford would succeed in his undertaking. We have in Alabama thousands of stockholders.

Mr. STOLL. I have seen a statement in the papers from prominent citizens of Alabama that 99 per cent of the people of Alabama are against the Alabama Power Co. That was the statement that was made.

Mr. MARTIN. I think that is a very exaggerated statement.

Mr. STOLL. So that your general reputation in Alabama, you think, is good?

Mr. MARTIN. I think it is.

Mr. STOLL. Who made the plans for the Gorgas extension?

Mr. MARTIN. They were made, I suppose, by Maj. Coombs and Mr. Thurlow; either made by Maj. Coombs or made by Thurlow, the chief engineer of our company and approved by the Government engineer, or made by the Government engineers in connection with our engineers; I do not know which way it was.

Mr. STOLL. Who was responsible for the interlocking of the Government plant and your plant?

Mr. MARTIN. The inception of the arrangement involved the operation of the station as one plant.

Mr. STOLL. It was necessary to do that?

Mr. MARTIN. It could not have been operated as a separate station.

Mr. STOLL. It was the Alabama Power Co.'s idea to tie the two together?

Mr. MARTIN. It was not an idea—it was our idea to furnish the Government power, and there was no other way to furnish the Government the power——

Mr. STOLL (interposing). Somebody must have conceived the idea of having the two plants interlocked.

Mr. MARTIN. We had foundations; we had preparatory work; there was six months' advantage gained in making use of those facilities and installing equipment on those foundations. That was in the minds of the Government officials and ourselves. It was not a question of benefiting the Alabama Power Co.; the time element was a very great factor.

Mr. STOLL. At that time was it the intention of the Alabama Power Co. to take over this plant later?

Mr. MARTIN. It was part of the program; the Government said to us this plant can be extended to meet our needs, provided you will agree to buy it at a fair value on our demand, and we agreed to that.

Mr. STOLL. That was agreed to before you commenced to build?

Mr. MARTIN. It was a part of our common understanding.

Mr. STOLL. Before you commenced to build it?

Mr. MARTIN. Yes.

Mr. STOLL. I think you testified that they said to go ahead, and you went ahead?

Mr. MARTIN. I said there were two fundamentals, Mr. Stoll; first, the transmission line that was constructed. We were told to construct the transmission line. Three weeks passed before there was any definite understanding with regard to the extension. The transmission line would enable the Government to take power out of our system. When it came to the extension of the power station there were two fundamentals involved. One was that the Government would finance the extension and the other was that we should agree to buy at a fair value on the demand of the Government. Col. Joyes and Maj. Coombs put those two fundamentals down, and on those two fundamentals we agreed to go ahead.

Mr. STOLL. This transmission line furnishes power only to the plant at Muscle Shoals?

Mr. MARTIN. Yes; the 110,000-volt line.

Mr. STOLL. There is no other place where you could use it unless it was used there, unless you carry the line somewhere else?

Mr. MARTIN. There is a substation at the Waco quarry, on the line.

Mr. STOLL. I mean, however, in reference to the power used in the Government development in making nitrates at Muscle Shoals, there is no other purpose it could be used for, is there?

Mr. MARTIN. Except to supply power in the community for distribution.

Mr. STOLL. Is there any demand there for it?

Mr. MARTIN. Yes.

Mr. STOLL. A sufficient demand to use it?

Mr. MARTIN. To use this line. We have been asked many times by the commercial companies to serve them power for distribution in that district.

Mr. STOLL. In your contract, I believe, you stated in case the Government let some other party have it, that certain things would happen. Is it optional with you to take over this property under your contract?

Mr. MARTIN. Under our interpretation of the contract the Government, if it does not ask us to buy, is under contract to sell, if we ask the Government to sell.

Mr. STOLL. Suppose you do not ask them to sell it.

Mr. MARTIN. Provided it is not removed.

Mr. STOLL. Could they remove it and get anything for it?

Mr. MARTIN. That is a problem.

Mr. STOLL. In your opinion, do you think they could remove the property and get anything for it?

Mr. MARTIN. Of course they can get something for it, but I could not estimate about how much.

Mr. STOLL. Practically nothing?

Mr. MARTIN. I would not put it that way.

Mr. STOLL. You would have to tear it all down?

Mr. MARTIN. You have the equipment there, which is of substantial value, and it is not good business, as a straight question of taking it away, when some one is willing to buy it at a fair value.

Mr. STOLL. Do you not think that was a contract solely for your benefit in particular?

Mr. MARTIN. No, sir; I do not, because we agreed to buy on demand of the Government. They considered the two fundamental terms before they would go ahead.

Mr. STOLL. Just a moment. Unless the Government sells it to you it must be torn down; no one else can have it under that contract; that is true, is it not?

Mr. MARTIN. That is true.

Mr. STOLL. The Government could not sell it to a party and have it all torn down and get a fair profit out of it?

Mr. MARTIN. Not a profit; no.

Mr. STOLL. Therefore it must be a contract where you get the best side of it?

Mr. MARTIN. It is not that at all. The Government contemplated that this property when created would be sold to the Alabama Power Co., and the Alabama Power Co. contemplated it would buy the property.

Mr. STOLL. Why did they put this provision in the contract then?

Mr. MARTIN. Suppose we do not buy, and the Government does not make the demand of us to buy; then the property is there.

Mr. STOLL. If the Government can not sell it, why can they not demand of you to buy it?

Mr. MARTIN. I do not know; I can not conceive of any reason why the Government should not demand of us to buy.

Mr. STOLL. Why would they put that into the contract?

Mr. MARTIN. That is one of the safeguards of the transaction.

Mr. STOLL. You do not think it protects you?

Mr. MARTIN. In this case only——

Mr. STOLL (interposing). You are a lawyer?

Mr. MARTIN. I am.

Mr. STOLL. You do not think that protects you?

Mr. MARTIN. It protects us against some one else coming in or buying it, and that is what is was intended to do.

(Thereupon, at 5.15 o'clock p. m., the committee adjourned to meet Monday, February 27, 1922, at 10.30 o'clock a. m.)

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Monday, February 27, 1922.

The committee met pursuant to adjournment at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. Mr. Dent and Mr. Martin, are you ready to proceed?

Mr. DENT. Yes; we are ready, Mr. Chairman. We have present here to-day one of the subscribing witnesses to the contract between the Government and the Alabama Power Co., who is ready to testify as to the actual date of the execution of the contract, if the committee desires to hear further testimony on that subject.

The CHAIRMAN. In order to identify the contract, we will be glad to have the witness make a statement.

STATEMENT OF MR. F. D. MAHONEY, ALABAMA POWER CO., BIRMINGHAM, ALA.

Mr. DENT. Mr Mahoney, were you connected with the War Department in any capacity during the war?

Mr. MAHONEY. I was.

Mr. DENT. In what capacity?

Mr. MAHONEY. I was consulting engineer along electrical lines to the Ordnance Department.

Mr. DENT. Do you remember the contract between the War Department and the Alabama Power Co. relative to the so-called Gorgas steam plant?

Mr. MAHONEY. I do.

Mr. DENT. Were you a witness to that contract?

Mr. MAHONEY. I witnessed its signatures; yes, sir.

Mr. DENT. Where was it signed?

Mr. MAHONEY. It was signed on the twenty-ninth floor of the Equitable Building, in the office of Mr. James Mitchell.

Mr. DENT. In New York City?

Mr. MAHONEY. New York City.

Mr. DENT. What was the date of its actual signature?

Mr. MAHONEY. The date was the day of the false report of the armistice.

Mr. DENT. Do you remember what date that was?

Mr. MAHONEY. November 7, 1918, I believe.

The CHAIRMAN. The testimony has been that it was November 9, but you fix it at November 7?

Mr. DENT. Mr. Chairman, Mr. Martin testified that it was on the day of the false report, which he thought was the 9th, but on looking up the record, it appears it was the 7th. I thought myself at the time it was the 7th. That is all, unless the committee want to ask Mr. Mahoney some questions.

Mr. JAMES. Who are you working for at the present time?

Mr. MAHONEY. I am with the Alabama Power Co.

Mr. JAMES. In what position?

Mr. MAHONEY. Commercial manager.

Mr. JAMES. How long since?

Mr. MAHONEY. I went to work with the Alabama Power Co. in February of 1919.

Mr. JAMES. In February of 1919?

Mr. MAHONEY. Yes, sir.

Mr. JAMES. How did the contract happen to be signed in New York City instead of here in Washington?

Mr. MAHONEY. I do not know anything about the reasons for that, Mr. Congressman, I am sure.

Mr. JAMES. Whom did you go up to New York with?

Mr. MAHONEY. I was stationed in New York at the time and was called over there, I believe, by Lieut. Col. Beames to assist him or to look over certain particular paragraphs of this contract which was all ready at that time for signature, and it was signed on that day.

Mr. JAMES. Is that the only time you know anything about this contract?

Mr. MAHONEY. No; I had had connection with it prior to that time, but not in some six months prior to that time, I suppose.

Mr. JAMES. Whom did you work for before you went into the Army?

Mr. MAHONEY. I was with the American Gas Co. of Philadelphia.

The CHAIRMAN. Were you an emergency officer during the war?

Mr. MAHONEY. I was not, Mr. Chairman. I was attached in a civilian capacity, as a consulting engineer, to the Ordnance Department.

The CHAIRMAN. You were not in the Army at all?

Mr. MAHONEY. I was not.

Mr. MCKENZIE. Under whose employ were you serving in the War Department?

Mr. MAHONEY. I was in the Ordnance Department. I was under Col. Joyes in the nitrates division up until about—I think the date was July or August, when I went over to New York under Mr. Frederick L. Cranford, who was made director of construction of all nitrate plants, and was an assistant to Mr. Frederick Cranford from that time until I left in February.

Mr. MCKENZIE. How did you happen to get into the service of the Government?

Mr. MAHONEY. I was working at the time on some transmission line work up in New York and up in the anthracite regions of Pennsylvania, and I think my first knowledge of this situation came through Mr. Edward Wells, chief engineer of the J. G. White Co., who was constructing Nitrate Plant No. 1 at Sheffield. I was naturally desirous of getting into the service and he told me about this work, and I got in touch with the Ordnance Department and went on to this nitrates program.

Mr. MCKENZIE. What was your age at that time?

Mr. MAHONEY. Twenty-eight.

Mr. MCKENZIE. When did you enter the service? That is, you were not in the military service at all.

Mr. MAHONEY. No, sir; not in the military service, in a sense. It was in the latter part of 1917.

Mr. MCKENZIE. Did you make any effort to get into the military service?

Mr. MAHONEY. Indeed I did.

Mr. MCKENZIE. What was the trouble, physically not fit?

Mr. MAHONEY. No, sir. Of course, I went in with the thought of being commissioned an officer. At that time there was some question about commissioning fellows of my age in Ordnance or out of the line capacity, because I was in the draft age, and the thing went up and back, and it is a long story as to how it came out, but I never did get my commission.

Mr. MCKENZIE. You were working for a Philadelphia electrical company?

Mr. MAHONEY. I was working for the American Gas Co., a holding company, in Philadelphia.

Mr. MCKENZIE. But after your service with the Government you did not return to your former company, but entered the employment of the Alabama Power Co.?

Mr. MAHONEY. Exactly.

Mr. MCKENZIE. Did the Alabama Power Co. hold out inducements that led you to go with them rather than with your former company?

Mr. MAHONEY. After the armistice was signed we in Mr. Cranford's office were engaged in winding up the affairs of plants 3 and 4, which as you may recall from the testimony, were salvaged, and I had a portion of that work; that is, gathering all the data and arranging for the cancellation of the various contracts which were extant on plants 3 and 4 and some on plant 2. Naturally, I was looking to my future after that work should wind up. I had several offers from various concerns, among them the company I had left, the American Gas Co., and one of them from Mr. James Mitchell, of the Alabama Power Co., and that was the offer which I finally accepted.

Mr. MCKENZIE. What are your duties at the present time?

Mr. MAHONEY. I have change of matters of power sales, rates, investigations, valuations, and any operation in the smaller towns that the company owns and operates, railway plants or electric systems.

Mr. MCKENZIE. You are not a stockholder in the company, I take it.

Mr. MAHONEY. I am.

Mr. MCKENZIE. You are a stockholder and employee?

Mr. MAHONEY. Yes, sir; as practically every employee of the Alabama Power Co. is.

Mr. STOLL. When did you acquire that stock in the Alabama Power Co.?

Mr. MAHONEY. When?

Mr. STOLL. Yes.

Mr. MAHONEY. Within the last year.

Mr. STOLL. Since you were connected with them?

Mr. MAHONEY. Oh, yes.

Mr. STOLL. Do you know why it was that this contract was dated back to December 1, 1917?

Mr. MAHONEY. I do not, Mr. Stoll; unless it was to validate work which had been done—more as a ratification than anything else. I never heard it discussed. I do not believe I noticed at the time the date of the contract. I just happened to be present in the building or in the conference, and was used as a witness.

Mr. FIELDS. What did I understand you to say your duties were while you were with the Ordnance Department?

Mr. MAHONEY. My duties were many, but my position was that of consulting electrical engineer.

Mr. FIELDS. Were you on this Muscle Shoals or Gorgas proposition?

Mr. MAHONEY. I was on the entire program, Mr. Fields—Muscle Shoals, Gorgas, nitrate plants 3 and 4 at Cincinnati and Toledo.

Mr. JAMES. Were you offered a position by the Alabama Power Co.?

Mr. MAHONEY. Was I offered one?

Mr. JAMES. Yes.

Mr. MAHONEY. Yes, sir.

Mr. JAMES. While you were in the employ of the Government?

Mr. MAHONEY. It was about the middle of January, 1919, when Mr. Mitchell first discussed with me the matter of going to Alabama.

Mr. QUIN. What was the date, as near as you can recall, that you were connected with the construction of this plant at Gorgas and the Muscle Shoals nitrate plants?

Mr. MAHONEY. I presume it was in January of 1918 that I first heard of this phase of the situation, Mr. Quin, the Gorgas phase of the Muscle Shoals situation; somewhere in January of 1918.

Mr. QUIN. When did you go to work with that enterprise?

Mr. MAHONEY. About that time.

Mr. QUIN. And that was under the contract of December 1, 1917, that that construction was going on?

Mr. MAHONEY. Yes, sir.

Mr. QUIN. Did you stay with that branch of the service until the armistice was signed?

Mr. MAHONEY. Not directly connected with the Washington office. As I say, I was moved over to New York in July or August.

Mr. QUIN. I meant with that branch of the service.

Mr. MAHONEY. Yes, sir.

Mr. QUIN. Who was paying you, the Government or the contractor?

Mr. MAHONEY. The Ordnance Department.

Mr. QUIN. The Ordnance Department was paying you, not as an officer, but as a civilian?

Mr. MAHONEY. Yes, sir.

Mr. QUIN. That work was carried on under the contract which is dated December 1, 1917, was it not?

Mr. MAHONEY. Yes, sir.

Mr. QUIN. The Alabama Power Co. did its part under that contract, as you understand it?

Mr. MAHONEY. Yes, sir.

Mr. QUIN. They received their pay or fee under that contract?

Mr. MAHONEY. Yes, sir.

Mr. QUIN. Do you know anything about how the fees were paid?

Mr. MAHONEY. I do not, sir.

Mr. QUIN. You were not one of the bookkeepers?

Mr. MAHONEY. No, sir.

The CHAIRMAN. If there are no further questions, we are very much obliged to you, Mr. Mahoney.

Mr. DENT. Now, Mr. Chairman, the other witness to this contract, Col. Beames, lives in New York City, and we are prepared to get him here, but not to-day, and if the committee desires any further testimony we will bring him down here just simply to take the time of the committee to prove the date of the actual execution of the contract. We have a telegram from him to the effect that he remembers distinctly that it was on the day of the false report of the armistice.

The CHAIRMAN. You can file the telegram.

Mr. DENT. The telegram from him relative to his recollection as to when the contract was executed?

The CHAIRMAN. Yes.

Mr. DENT. All right.

Mr. MCKENZIE. As I understand it, Col. Beames was an Engineer officer?

Mr. MARTIN. He was an Engineer officer, yes, sir; Lieut. Col. Beames.

The CHAIRMAN. And what is his full name?

Mr. MARTIN. C. F. Beames.

(The telegram referred to follows:)

[Telegram.]

MACON, GA., *February 4, 1922.*

THOS. W. MARTIN,
Care Hotel Waldorf Astoria, New York, N. Y.

As a witness to the signing of contract No. T-69, bearing date December 1, 1917. I confirm your understanding that said contract was finally executed by the contracting officer and the late Mr. Mitchell at New York, on November 7, 1918.

C. F. BEAMES.

Mr. DENT. Mr. Chairman, there is just one additional statement Mr. Martin would like to make, and then I will be prepared to go ahead and wind up.

ADDITIONAL STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO., BIRMINGHAM, ALA.

The CHAIRMAN. We will be glad to hear from Mr. Martin.

Mr. MARTIN. I just want to make an additional statement, Mr. Chairman, to the effect that no one connected with the proposal of Mr. Henry Ford in any way has taken up with us this subject of our property rights; and no one representing the Government has taken up with us the subject of our property rights prior to the hearings before this committee, and we would have liked to have had, but did not have, an opportunity to present our views to the Judge Advocate General. We had no opportunity, prior to the time the matter came before this committee, to present our case.

Mr. DENT. In other words, neither party to the contract consulted you with reference to your property rights at all.

Mr. MARTIN. No. That is correct.

The CHAIRMAN. Then, let me ask you these questions. At the beginning of July, say, of 1921, you were engaged in your present business of selling power?

Mr. MARTIN. Yes.

The CHAIRMAN. And I presume also electricity.

Mr. MARTIN. We were.

The CHAIRMAN. Did you receive, from the Chief of Engineers of the War Department, any letter suggesting to you to make an offer for the Muscle Shoals property?

Mr. MARTIN. We did.

The CHAIRMAN. Did you accept that?

Mr. MARTIN. I would be glad to go into that subject but that leads possibly into another branch of the question, but if you wish me to, I will go into it now.

The CHAIRMAN. I think it would be well to go into it because that matter has been brought to the attention of the committee by the Chief of Engineers.

Mr. MARTIN. Yes, sir.

The CHAIRMAN. He called the attention of the committee to the fact that he issued probably a dozen letters to people who were in that business at that time, and said that the Ford offer was the only reply received favorable to this proposition that we are considering.

Mr. DENT. Mr. Chairman, if I may make a suggestion, would not that be properly in line with the hearing when you consider the bid of the Alabama Power Co. rather than to mix it up with this proposition which we are contending is purely the assertion of their legal rights under the Ford proposition. Of course, we are ready to go into it right now.

The CHAIRMAN. There is no particular hurry about it. If you intend to go into it when you present your other matter, that is time enough, I take it.

Mr. MARTIN. Yes.

The CHAIRMAN. But I think we ought to have your statement completely regarding the answer you gave Gen. Beach.

Mr. MARTIN. We had planned to go into that, Mr. Chairman.

Mr. FIELDS. It seems to me that might have some bearing on the legal aspect of the proposition.

Mr. QUIN. No; it could not do that.

The CHAIRMAN. I do not think it is very material whether it goes in here or whether it goes in, in reference to their own proposition. I do not think the place it goes in is material.

Mr. MILLER. As I understand it, we are now on that portion of the hearing where the Alabama Power Co. is asserting or wants to point out its legal rights under the Ford offer.

Mr. DENT. Exactly.

Mr. MILLER. And when they get to the submission of their own proposition, then it seems to me it would be better to bring up the matter suggested by Mr. Martin.

The CHAIRMAN. I have stated that the committee at that time will be very glad to hear him on the proposition. Mr. Martin. Mr. James would like to ask you a question.

Mr. JAMES. What percentage of this work was done by subcontracts; I mean, the work at the Gorgas plant.

Mr. MARTIN. On such work as grading we employed, I think, some contractors who had teams to do some grading work, and possibly some contractor to supply erectors of steel. It was a very small percentage.

Mr. JAMES. Did you pay those men monthly?

Mr. MARTIN. They were paid on the pay roll twice a month, so the Chief Engineer states.

Mr. JAMES. Did you have a written contract with those contractors?

Mr. MARTIN. Yes.

Mr. JAMES. Were these contracts with the subcontractors dated before or after this contract was signed in New York City.

Mr. MARTIN. I am speaking from pure recollection, but I would assume they were dated subsequently. I have nothing to fix it in my mind.

Mr. JAMES. As a good business proposition you figured it was to your interest in looking after the interests of the Alabama Power Co. to have written contracts with your subcontractors signed at about the time they started to work.

Mr. MARTIN. Those things emanated in the form of a letter in the nature of a purchase order from the engineering staff of the Government at Birmingham.

Mr. JAMES. I mean the work of your subcontractors.

Mr. MARTIN. I do not know that I have any definite idea one way or the other about that. Our chief engineer states they were mostly handled on purchase orders approved by the resident engineer of the Government, just as in the case——

Mr. JAMES. I am not talking about that. You said you hired men to do grading, etc., as subcontractors. Did you have a written contract with those subcontractors?

Mr. MARTIN. I assume it was in the nature of a purchase order. That is the way the work moved from time to time.

Mr. JAMES. Will you put in the record the dates of the contracts with these subcontractors?

Mr. MARTIN. We can not furnish the dates of the contracts or purchase orders with subcontractors from data which we have here in Washington. However, as these contracts or purchase orders related only to grading, and as all grading was completed on or before November 1, 1918, these subcontracts or purchase orders were all dated prior to that time.

Mr. DENT. That is all we have from Mr. Martin, Mr. Chairman, unless there are some further questions.

Mr. QUIN. Mr. Martin, who designed and made the specifications for the work you did down there. Did the Alabama Power Co. do that?

Mr. MARTIN. In the first instance, Mr. Quin, the Alabama Power Co. had made plans for the enlargement of this power station. On those plans it had arranged to purchase equipment or had placed orders for some equipment for a new unit—a second unit. Those plans were practically completed for that particular size unit that we wanted. When the Government came into it, those plans, of course, were available to the Government. They had to be changed from time to time to meet the new ideas that the Government engineers had. Among others, the Government engineers wanted larger equipment than the equipment we had planned. From time to time additional plans were made, either made by our own engineering staff and approved by the Government engineers, or made by the Government engineers, in conjunction with our engineers.

Mr. QUIN. Then you mean to state that the original plan of this Gorgas plant and transmission line——

Mr. MARTIN. Not the transmission line, because we had no plans on the subject of the transmission line.

Mr. QUIN. Did you make that plan for the continuation of the 68 miles of transmission line?

Mr. MARTIN. We did make that plan; yes.

Mr. QUIN. Then the Gorgas plant was designed by the Alabama Power Co., was accepted with certain variations by the Government, and whatever changes were made in it were made, perhaps, by your company in conjunction with the Government's engineers?

Mr. MARTIN. Yes, sir; the recital in the contract, in the opening clause, states that the company had, among other things, in connection with this extension, Item D plans and specifications.

Mr. QUIN. That is, the Alabama Power Co.?

Mr. MARTIN. Yes, sir; that is in the contract.

Mr. QUIN. Then, that part of the contract you carried out.

Mr. MARTIN. We did.

Mr. QUIN. You carried out the construction of it?

Mr. MARTIN. Yes.

Mr. QUIN. Did you draw your fees along as the work was being done, or wait until it had all been completed, before you drew your fees?

Mr. MARTIN. I am sure I could not tell you.

Mr. QUIN. I presume you drew it, like other contractors, as the work went along?

Mr. MARTIN. The chief engineer advises it was toward the end of the job that the fee was paid.

Mr. QUIN. About what time, if you have any evidence on that?

Mr. MARTIN. It was late in the work, Mr. Quin. We would have to find the records to tell you.

Mr. QUIN. Will you find out about that and put it in the record?

Mr. MARTIN. Yes; we will undertake to find that out.

The information requested is as follows:

"The payment of $60,000 to the company by the United States, provided for by article 12 of contract T–69, was received November 27, 1918. The contractor's fee, provided for in article 13 of said contract, was received as follows: November 27, 1918, $100,000; April 18, 1919, $75,000; May 26, 1919, $50,000."

Mr. QUIN. The work from starting the breaking of the ground clear on to completion had to be paid for, did it not?

Mr. MARTIN. Yes.

Mr. QUIN. And the Government advanced all of that money?

Mr. MARTIN. It did after the work was well started; yes.

Mr. QUIN. And you paid your men and the subcontractors out of Government funds?

Mr. MARTIN. No; the Government took over the pay rolls and made direct payments for the work after the job was well advanced, and had a disbursing officer on the job and handled the payments direct.

Mr. QUIN. Mr. Wurzbach asked you the other afternoon to produce the letters and written memoranda and working orders; have you procured those?

Mr. MARTIN. Yes, sir; there is quite a batch of them [indicating].

Mr. QUIN. Will you put those in the record, according to his request?

Mr. MARTIN. Yes.

(The letters, work orders, and written memoranda requested are as follows:)

NOVEMBER 6, 1917.

Col. J. W. JOYES,
Ordnance Department, Washington, D. C.

DEAR SIR: In a conference to-day Mr. Frank S. Washburn, president of the American Cyanamid Co., asked the Alabama Power Co. to formulate a definite proposal as to what it was prepared to do in the way of supply of power to the proposed new nitrate works at Muscle Shoals, Ala., on the Tennessee River.

Until such time as there shall have been definitely determined the details of the Government's requirements we are only able to formulate a proposal along general lines, and one which may be considerably modified as to details in carrying it out.

The financing of such an installation at this time would not be warranted by the present needs of the power company, but it is prepared to cooperate in every possible way with the Government in the undertaking which you have in view.

We estimate that the necessary additions to our Warrior River steam plant and the transmission lines and substation necessary for delivering power at Muscle Shoals will cost approximately $2,250,000. If the Government will finance the undertaking and assist in deliveries, the power company will be prepared to install with maximum urgency the necessary steam plant, substation, and transmission lines. The company will supply 30,000 kilowatts, delivered to the Muscle Shoals substation at a combined energy, and demand charge of 7 mills ($0.007) per kilowatt-hour.

The power company will undertake to set aside 3 mills ($0.003) per kilowatt-hour for all energy supplied under this proposal until the Government has been reimbursed for all sums advanced to the company in this connection.

We understand the power requirements of the proposed nitrate plant, so far as this company is now concerned, to be about 30,000 kilowatts, which must be in readiness in about six months. The company can be in readiness with this amount of power within the time required, and with the completion of the extension above referred to can continue to furnish this amount of power regularly.

The company has contracts with the Gulf States Steel Co., Tennessee Coal & Iron Co., many coal mines, the Southern Manganese Co., and various graphite products companies, all of which are directly connected with the proper conduct of the war, whose continued operations will not be affected under the plan proposed herein.

The Alabama Power Co. has available considerable apparatus which ordinarily takes a long period to obtain and which might be used in connection with the proposed work. It also has an excellent construction and operating organization with a long experience with local conditions.

Holding ourselves at your orders for further treatment of the subject, we are,

Very respectfully, yours,

ALABAMA POWER CO.,
JAMES MITCHELL, *President.*

"SUGGESTED BASIS FOR CONTRACT BETWEEN ALABAMA POWER CO. AND UNITED STATES FOR POWER FOR AIR NITRATES CORPORATION PLANT AT SHEFFIELD.

"Whereas the United States desires to obtain from Alabama Power Co. at as early a date as possible after the completion of the nitrate plant on or after June 1, 1918, about 35,000 kilowatts, and Alabama Power Co. has contracted for all the power from its existing plants that are economical to operate, and can not finance at this time any extensions of plants, but has existing at its Warrior River plant certain foundations and accessories for two 35,000-kilowatt units additional to what is now installed; and

"Whereas Alabama Power Co. would effect some economies in the operation of its present Warrior plant by operating therewith other units and would derive benefit from the use of such quantity of power as might be available after meeting the United States needs from additional units there installed; and

"Whereas the United States would likewise derive benefit from the economies of joint operation of all the units—that now existing and those now proposed to be installed at the Warrior plant—and would thereby derive the further benefits of power at a cost probably lower than elsewhere obtainable and of the assurance

of ample power for its needs by the guaranties of the Alabama Power Co., based upon all its plants;

"Agreed that the Alabama Power Co. shall acquire at its expense the necessary rights of way and shall build a transmission line from its Warrior plant to the Air Nitrates Corporation plant at Sheffield, and also upon its existing foundations at Warrior, so far as suitable, to erect suitable temporary building and procure and erect therein and on said foundations one 35,000-kilowatt turbo-generator, with battery of boilers and all accessories as now there exist and can serve such unit in addition to that now installed belonging to Alabama Power Co., and also procure and erect ready for use but without boilers, etc., therefor, another similar 35,000-kilowatt turbo-generator as a spare generator available in the event of temporary unserviceability of the aforesaid one;

"The United States to pay all cost of the foregoing constructions and procurements, except right of way, and in addition as remuneration for its services and as payment in full for whatever of its existing facilities, etc., may be used to aid in such work, a basic fee of — per cent of such cost, provided such fee is understood to be based upon completion and availability for use of the transmission line by six months from date of contract and of the first power unit complete by eight months from said date, and that, as representing the estimated value to the United States of such utilities, a sum equal to 1 per cent of said fee on each of said utilities shall be added to the 5 per cent fee thereon for each day by which completion shall antedate the stipulated date of completion, and, likewise, 1 per cent of said 5 per cent fee shall be deducted therefrom for each day by which completion shall be delayed beyond such stipulated date, provided, however, that in no event shall the fee be less than 3 per cent nor more than 7 per cent, the Government to cooperate in securing deliveries, subject to delays beyond control.

"Also, as soon as transmission line and nitrate unit shall be completed, and upon demand of contracting officer, Alabama Power Co. to stand obligated to furnish 10,000 kilowatts and to furnish as much more as it can spare without operating Birmingham plant or depriving other customers now under contract, at rates as follows: Demand charge of $1.25 per kilowatt per month, plus energy charge for current used according to scale, which shows for over 50,000 kilowatt hours per month a price of $0.004 per kilowatt hour—no extras, no constructive basis for demand rate, which shall be upon 10,000 kilowatt hours, that is, $12.500 per month—and this arrangement to continue in force until the additional power-generating equipment (first unit) above provided to be installed at cost of United States shall be ready for operation.

"Thereafter, Alabama Power Co. to operate all units at Warrior plant—their own and those of the United States—as a single plant, keeping careful cost record, furnish United States regularly 30,000 kilowatts whenever needed, whatever other customers' demands may be, supporting this guarantee by the entire system owned or controlled by it, hydro or steam, including the Birmingham steam plant; and the Alabama Power Co. to have the privilege of using as they see fit in their general business such portion of the power generated as above at their Warrior plant (including the United States owned apparatus) as the United States shall not require; and

"In consideration of such use by Alabama Power Co. of such surplus power, and the expectation of economies of such joint operation, the Alabama Power Co. agrees to accept from United States as payment in full of all obligation of United States for use of Alabama Power Co. land, foundations, accessory apparatus, right of way, and all other of its property thus used in the joint operation of the plant or in the transmission, or occupied by the articles belonging to United States and of all services whatsoever by Alabama Power Co., and any of its agents, employees, etc., only the proportions of the operating costs of the Warrior plant which the current held for or used by United States bears to total current generated.

"After June, 1921, or later date of cessation of United State participation in present war, the United States owned transmission line and power apparatus and temporary building, etc., to be leased or sold to Alabama Power Co., if law permits and if satisfactory agreement on price, and if not, all property of United States to be removed within, say, six months, from premises and right of way of Alabama Power Co. at United States's expense. The Government to commandeer power from Alabama Power system when necessary to deprive other customers in order to supply Government under any provision hereof."

WASHINGTON, D. C.,
December 7, 1917.

Col. J. W. JOYES,
Colonel, Ordnance Department, United States Army,
Washington, D. C.

SIR: This company acknowledges receipt of your purchase order (Ex. Order No. 154) of date December 7, 1917, for the construction of a transmission line from our steam plant on the Black Warrior River to the site of the proposed ammonium nitrate plant at Sheffield, Ala.

In accordance with your instructions, we are proceeding to book this order as a definite order on behalf of the Ordnance Department, United States Army, and will proceed as speedily as possible toward carrying out your instructions.

Yours, very truly,

ALABAMA POWER CO.,
By THOS. W. MARTIN,
Vice President and General Counsel.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, December 7, 1917.

ALABAMA POWER CO.,
Birmingham, Ala.:

By authority of the Chief of Ordnance you are hereby given an order to construct on lands owned by you, or rights of way under your control, from your steam-power plant on the Black Warrior River to the site of the proposed ammonium nitrate plant of the Air Nitrates Corporation at Sheffield, Ala., for the present known as the United States Nitrate Plant No. 2 a transmission line for the purpose of, and of proper capacity for transmitting electric current of 3-phase, 60-cycle and about 110,000 volts. This line to be built as economically as possible, being for the temporary use of the United States in transmission of power during the period of the present war, or thereabouts. The line to be the property of the United States, and suitable arrangements to be made as already tentatively agreed upon to cover the payment of actual cost plus a percentage thereof, to cover use of Alabama Power Co.'s lands, right of way, construction forces, and other facilities, etc., and profit. All these conditions to be embodied in a future contract.

Priority class A–1 has been requested from the War Industries Board for the manufacture of this material (copy of which is inclosed) so that delivery may be made at the earliest possible date.

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and promptly acknowledge receipt thereof.

Very truly, yours,

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, December 7, 1917.

ALABAMA POWER CO.,
Birmingham, Ala.:

By direction of the Chief of Ordnance you are hereby given an order to furnish certain electric power, as specified hereafter, to the United States Nitrate Plant No. 2, being constructed for the United States at Sheffield, Ala. (Muscle Shoals), by the Air Nitrates Corporation of New York, viz:

Upon completion of the transmission line from your Warrior plant to the United States Nitrate Plant No. 2, at Sheffield, expected to be by or soon after June 1, 1918, which you are to construct under my order XOT–154, you to furnish from any resources of your system a guaranteed 10,000 kilowat and as much more as may be available without interfering with your present signed customers, or requiring operation of the Birmingham steam plant, and as the United States may require, at certain rates tentatively agreed upon and to be embodied in contract to be signed directly.

Also, upon completion of the addition to your Warrior steam plant, to be built by you for the United States, as per contract to be signed directly and as covered by my order XOT–155, which completion is expected to be about August 1, 1918, you to furnish from said Warrior steam plant as a whole, including your present plant and the United States temporary additions thereto, on the basis of an equitable division of the cost of operating that plant, a firm quantity of 35,000 kilowats, or so much thereof as may be needed by the United States, undertaking to assure this quantity of power by your power resources other than the Warrior steam plant, the conditions of such assurance and of the basis of distribution of costs to be more particularly set forth in contract now tentatively agreed upon and to be signed directly.

Priority Class A–1 has been requested from the War Industries Board for the electrical power (copy of which is inclosed).

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and promptly acknowledge receipt thereof.

Very truly, yours,

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, December 7, 1917.

ALABAMA POWER CO.,
Birmingham, Ala.:

By direction of the Chief of Ordnance, you are hereby given an order to procure and install for the United States, as a temporary addition to the steam power producing facilities at your Warrior River plant in Alabama, and to enable you to supply to the United States nitrate plant No. 2, being constructed at Sheffield, Ala., by the Air Nitrates Corporation for the United States, the supply of power contemplated by a separate purchase order XOT–156 of even date herewith, as follows:

1. 35,000-kilowatt turbo-generator unit, with suitable accessories, as condensers, switchboards, battery of boilers, etc., directly necessary to its service, and such auxiliary accessories as may be needed in addition to what you now have installed, or should properly put in for the portion of your plant now existing, which may be necessary for the operation of this plant as a whole approved by the undersigned.

Spare turbo-generator of approximately 35,000 kilowatts, as above, with the necessary accessories, not including steam-producing equipment, as may be necessary to enable this unit to take the place of the first unit mentioned above in the event of temporary unserviceability thereof, as recommended by you and approved by the undersigned.

Also, to install the foregoing upon your existing land and foundations, etc., and to erect thereover a temporary building for the production of such apparatus.

Provided, That all of the foregoing work is to be performed by you on the basis of reimbursement of actual cost plus a construction fee, in consideration of which you will allow, without special rental or similar charges therefor, the use of your land, foundations, and other property as needed, all such conditions to be embodied in a contract now tentatively agreed upon and to be signed directly.

Priority Class A–1 has been requested from the War Industries Board for the construction of this temporary addition to power plant (copy of which is inclosed).

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and promptly acknowledge receipt thereof.

Very truly, yours,

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

DECEMBER 11, 1917.

Memorandum of the conference, Saturday afternoon, December 8, 1917, between Col. J. W. Joyes, Ordnance Department, United States Army, and Messrs. James Mitchell and Thomas W. Martin, of the Alabama Power Co. at Col. Joyes's office, Washington, D. C.

In a number of previous conferences we discussed the various questions involved in the proposed agreement between the Alabama Power Co. and the United States, to be dated December 1, 1917, touching the supply of electric power for the ammonium nitrate plant at Muscle Shoals, and we reached certain preliminary agreements substantially embodied in the final draft handed to Col. Joyes at this interview.

Mr. Mitchell explained to the colonel that we had made a number of inquiries of manufacturers of equipment and apparatus which would be needed for the proposed extension at our Warrior plant and the transmission line, and found that there were available two 35,000-kilowatt turbines, one of which would be completed in January, and that we had placed an order with the General Electric Co. for this turbine for the purpose of this contract. Mr. Mitchell then took up in detail with the colonel the various apparatus and equipment which would be needed, and the colonel said that he would at once request the priority committee for a general priority order for this material, and took down the following general items to be covered: One 35,000-kilowatt General Electric turbine, with switchboard and transformers and other equipment (in connection with transformers, we discussed the question whether the Alabama Power Co. would purchase the stepdown transformers and other substation equipment for that purpose at Muscle Shoals and it seemed to be the view that the Power Co. should do this, but this was left somewhat uncertain); Babcock & Wheeler to furnish the necessary boilers, probably 12 or 13, and stokers (Mr. Mitchell pointed out that the manufacturers of boilers usually furnished stokers with the boilers); about 35,000 insulators to be furnished by the Ohio Brass Co., if it can handle so large an order, otherwise to be divided among other manufacturers, also the necessary stranded copper cable, to be either 400,000 circular mills for one circuit only or the equivalent in two circuits; also 160 or 320 miles of 7/16-inch steel cable for ground wire; also creosoted poles to be furnished by manufacturing concerns at Birmingham and New Orleans, the order to be divided between them.

We also discussed the proposed 8,000-foot extension of one Southern Railway line to the Warrior plant, but Col. Joyes indicated that he did not care to put this in the contract and would, if necessary, take this up later in some other way. Meanwhile he requested an estimate of the freight business which this extension might bring to the Southern Railway from the carriage of construction equipment, laborers, etc., to the Warrior plant; also permanent business, such as the carriage of coal.

It was understood that Mr. Thurlow would make up an estimate covering the items of freight mentioned.

Col. Joyes further stated that he would issue at once a work order for us to proceed with the construction of these additions to the Warrior plant, taking as the basis of his action the draft of agreement above referred to.

Mr. Mitchell mentioned that we would probably arrange for some one to remain in Washington constantly to represent us in the various matters which would arise from time to time with the Ordnance Department in connection with this contract and asked the colonel whether the expenses of the representative would be included as a part of this construction; to which he assented, but suggested that it would probably be best for the representative to come into the office of Col. Joyes and there take a desk, as will be done by other contractors, as this would lead to better results and would enable him to keep in closer touch with us.

Col. Joyes further explained that he was leaving Saturday night for Sheffield, and would probably arrange to visit our Warrior plant on Wednesday next and would then return to Washington, meeting the colonel on Friday, the 14th instant, to further complete the contract.

BIRMINGHAM, ALA., *December 13, 1917.*

Col. J. W. JOYES,
Ordnance Department, Washington, D. C.

DEAR SIR: We beg to acknowledge receipt of Ex. Order No. 156 covering purchase order on our company for electric power to be delivered to the Federal Government after the completion of the transmission line order on your Ex. Order T–154.

Also Ex. Order T–155 covering temporary addition of one 35,000 kilowatt turbo generator with the accessories and one spare turbo generator for our Warrior steam plant.

Following the writer's conservation with you at the Warrior steam plant Wednesday, we are holding these orders in suspense until we are further advised by you.

Yours, very truy.

CHIEF ENGINEER.

SUGGESTED BASIS FOR LEASE OR PURCHASE OF PROPOSED STEAM PLANT.

The Alabama Power Co. lease to the Government free of charge such lands, clearing sites, and foundations, tunnels, and other contruction work which it may have completed or partially completed as may be necessary for the following:

The Government to pay for the construction and equipment of a power house such as may be necessary to furnish power to the terminal substation of the Sheffield transmission line, and to consist of at least one 30,000 kilowatt turbo generator, and corresponding equipment.

One battery of boilers for operating the above plant continuously at full capacity.

One spare 30,000 kilowatt turbo generator and necessary equipment except boilers and corresponding accessories.

All arranged to operate interconnected with existing Warrior steam plant.

The power company to operate the combined Warrior plant as a unit separate from the rest of the power company's system and charge each party with the power actually used at actual power house cost; each party to pay such costs, maintenance, etc., as pertains to its share of the plant.

The power company to agree to lease or buy and the Government to lease or sell its investment at Warrior site on termination of its need for war purposes. Value to be agreed upon at once and to be based on costs prevailing prior to influence of war, say years 1914–15, less depreciation, etc., and having in view its permanent value to the Government and to the company.

In case of lease company to pay 5 per cent interest and sinking fund to amortize in 12 years.

Or contract to buy on installments annually with interest on balance due.

In making price, fact of company operating plant at no cost to Government should be considered. Company to have right in meantime to use surplus capacity of plant, at its own cost.

If it be said that the Government can not under present laws bind itself to sell or lease after the war—then we suggest that an agreement can be made which will be binding on the power company by which it will agree to buy or lease from the Government on certain stated terms, within a certain period after the war—if the Congress hereafter vests power to carry out such an arrangement.

DECEMBER 19, 1917.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE.
Washington, December 21, 1917.

ALABAMA POWER CO.,
Birmingham, Ala.

By authority of the Chief of Ordnance, you are hereby directed to make the following modifications of our Order XOT–154, of December 7, 1917:

In addition to the transmission line proper ordered in XOT–154, as originally drawn, that order will cover also suitable transformer station for step-up to 110,000 volts at the Warrior plant end, and suitable transformer station for step-down from line voltage to 12,000 volts or thereabouts, as to be more particularly specified by inspector, and both these stations to be complete outdoor stations with proper oil switches, etc., details to be approved by inspector.

All facilities contemplated will be of ample capacity to carry 35,000 kilowatts continuously without injury and without excessive energy loss and voltage drop. At present single circuit of 250,000 circular mills, hard-drawn stranded copper, regarded as most suitable—this to be definitely decided between you and the undersigned.

It is to be understood that every effort is to be made to have this entire line with the two substations in readiness for use by June 1, 1918, and that whatever temporary arrangements are necessary for taking the current (which you will then have to take from your own lines, instead of from your additional

generating capacity which we expect to install) must be provided in some manner satisfactory to this office.

In addition to the payments mentioned in the original order for actual cost the percentage will be 6 per cent.

Nothing else on order to be changed.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE.
Washington, January 8, 1918.

ALABAMA POWER CO.,
Birmingham, Ala.

By direction of the Chief of Ordnance, Purchase Order XOT–155 and letter (T–8277) of December 14, 1917, are hereby cancelled, and you are hereby given an order to purchase and install for the United States as a temporary addition to the steam-power producing facilities at your Warrior River plant in Alabama, and to enable you to supply to the United States at Sheffield, Ala., the supply of power contemplated by a separate purchase order XOT–156, Mod. No. 1, of even date herewith, as follows:

One 30,000-kilowatt turbo-generator unit, with suitable accessories, as condensers, switchboards, battery of boilers, etc., directly necessary to its service, in addition to what you now have installed, or should properly put in for the portion of your plant now existing.

Also to install the foregoing upon your existing land and foundations, etc., and to erect thereover a temporary building for the protection of such apparatus.

Provided, That all of the foregoing work is to be performed by you, subject to the approval of the undersigned and on the basis of reimbursement of actual cost plus a construction fee in consideration of which you will allow without special rental or similar charge therefor, the use of your land, foundations, and other property as needed—the actual amount or percentage of such construction fee to be embodied in a future contract; said contract to be mutually agreed to by your company and this office, or in the event of disagreement to be referred to a competent and authorized board for settlement.

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and sign below the acknowledgment and acceptance on the part of your company.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

JANUARY 8, 1918.

We accept the above order.

ALABAMA POWER CO.,
By JAMES MITCHELL,
President.
THOMAS W. MARTIN,
Vice President and General Counsel.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, January 8, 1918.

ALABAMA POWER CO.,
Birmingham, Ala.

By direction of the Chief of Ordnance, purchase order XOT–156 is hereby canceled, and you are given this order to furnish certain electric power, to be specified hereafter, to the United States, at Sheffield, Ala., viz:

Upon completion of the transmission line from your Warrior plant to Sheffield, which line you are to construct under my order XOT–154, you will furnish from any resources of your system such part of 10,000 kilowatt as the United States may require; and in excess of that quantity, if available, as the United States may require. The rates of payment to be embodied in a future contract.

Also upon completion of the additions to your Warrior steam plant to be built by you for the United States, as covered by my order XOT–156, Mod. No. 2, which

completion is expected to be about August 1, 1918, you will furnish from said additions such part of 30,000 kilowatt as the United States may require, and in excess of that quantity, if available, from your system as the United States may require.

The rates for power and other terms hereunder to be embodied in a future contract; said contract to be mutually agreed to by your company and this office, or in the event of disagreement, to be referred to a competent and authorized board for settlement.

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and sign below the acknowledgment and acceptance on the part of your company.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

JANUARY 8, 1918.

We accept the above order.

ALABAMA POWER CO.
By JAMES MITCHELL,
President.
THOS. W. MARTIN,
Vice President and General Counsel.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, January 25, 1918.

From: Nitrate Division T, Ordnance Department.
To: Alabama Power Co., 120 Broadway, New York.
Subject: Power installation at Warrior.

1. Please reserve space for extending power house so that an additional unit or perhaps units might be installed. This would not involve building any additional foundations or superstructure, but would indicate the use of a perhaps somewhat temporary end wall and the preservation of the necessary ground beyond the limits of the present buildings.

2. Also reserve space for future additions to transformer station, and bear in mind that a duplicate transmission line may sometime be necessary.

3. Please advise if this introduces any extra expense or difficulty.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.
By R. D. COOMBS,
Major, Ordnance Reserve Corps.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, February 28, 1918.

ALABAMA POWER CO.,
Birmingham, Ala.:

By direction of the Chief of Ordnance, Purchase Order XOT–154 Model No. 1 of December 21, 1917, is hereby specifically stated and agreed to be an agency contract order.

All of your purchase orders will continue to be issued "For the account of the United States Ordnance Department, Nitrate Division."

All contracts with venders will be specifically stated therein as for the account of the United States and title to such property will vest in the United States.

Direct payments for labor and materials will be made by the United States to the parties furnishing the same.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.
By ALFRED H. WHITE,
Lieutenant Colonel, Ordnance Department, National Army.
ALABAMA POWER CO.,
By JAMES MITCHELL,
President.
W. N. WALMSLEY,
General Manager.

FEBRUARY 28, 1918.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, February 28, 1918.

ALABAMA POWER CO.,
Birmingham, Ala.:

By direction of the Chief of Ordnance, Purchase Order XOT–155 Model No. 2 of January 8, 1918, is hereby specifically stated and agreed to be an agency contract order.

All of your purchase orders will continue to be issued "For the account of the United States Ordnance Department, Nitrate Division."

All contracts with venders will be specifically stated therein as for the account of the United States, and title to such property will vest in the United States.

Direct payments for labor and materials will be made by the United States to the parties furnishing the same.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.
By ALFRED H. WHITE,
Lieutenant Colonel, Ordnance Department, National Army.
ALABAMA POWER CO.,
By JAMES MITCHELL,
President.
W. N. WALMSLEY,
General Manager.

FEBRUARY 28, 1918.

MEMORANDUM IN RE INSTRUCTIONS FOR DISBURSEMENTS UNDER AGENCY CONTRACTS WITH PARTICULAR REFERENCE TO THE CONTRACT WITH THE ALABAMA POWER CO.

Purchases.—The agent—that is, the Alabama Power Co.—will issue purchase orders to vendors for material needed in the discharge of the contract work. There should be at least three copies of these purchase orders, one for the contractor, one to accompany the vouchers to the Auditor for the War Department, and one for the records of the disbursing officer who shall make the payment thereunder.

Invoices.—It would perhaps be wise for the agent to prepare a particular form of invoice to be issued by vendor containing such data as the agent may desire for his files. These invoices should be at least three in number, one for the agent, one to accompany the voucher to the Auditor for the War Department, and one to remain with the memorandum voucher in the office of the disbursing officer who shall make the payments. The invoice which shall go to the Auditor for the War Department along with the original voucher should contain the following certificate signed in each case by the vendor:

"I (or we) certify that the above account is correct and just, and that payment therefor has not been received."

When the invoice, including the one containing the certificate above indicated, shall be received by the inspector at the plant, or other Government officer, he will prepare a voucher on voucher form 330–a and attach thereto a certified copy of the invoice and also one of the duplicate copies thereof.

The inspector will also sign the certificate on the public voucher to the effect that the material has been received and that the quality and quantity are satisfactory, etc. The approval form on the voucher should also be signed by the proper officer, and if desirable the agent may also approve on the voucher the amount of the expenditures.

Payment.—After the voucher shall have been prepared in the manner above indicated it will be presented to the disbursing officer at the plant, who, if satisfied that the account is correct upon comparing it with the purchase order in his possession, will pay the voucher directly to the vendors; that is, to the persons who have filled the order that was given them by the agent.

Vouchers for the agent's profit.—From time to time the agent can state a voucher on form 330–a, signing the voucher in the place indicated for the creditor, for the amount of his profit as determined in the contract. He will, of course, be in a position to obtain the proper amount upon which to base this profit upon consulting his records as to orders given and actually filled. The agent's voucher for profit will also be certified to by the inspector and by the proper officer and will be paid by the disbursing officer at the plant in the manner above indicated.

Vouchers for pay rolls and method of authenticating payment to employees.—Under an agency contract the employees are considered as employees of the United States. This being the case, the agent will prepare the pay roll of his employees from his time records, and will certify the rolls as to its being correct. The inspector will also certify the roll on the faith of the certification of the agent or upon such independent information as he may have, and the disbursing officer will make the payments to the employees direct in whatever manner that may be the most convenient, presumably making the payments in cash.

Under recent decisions of the Comptroller of the Treasury the payment of these employees must be authenticated in the following or similar manner:

On the morning of the pay day there shall be circulated to all employees, by means of the paymaster, a form of receipt for the payment; these forms will be signed immediately by the employees, and all such employees who can not write will sign by mark, their signature to be witnessed by the paymaster, who is a United States employee. These employees will also have an identification tag of some sort, and when they appear before the paymaster for their pay they will exhibit the identification tag and also their pay receipt. The paymaster will then take up the pay receipts, and they will be filed away carefully as supporting papers in the accounts of the disbursing officer when his vouchers are sent to the Auditor for the War Department for settlement.

Advance payments.—Section 3648 of the Revised Statutes expressly prohibits the payment for any service or supplies in advance of the actual rendering of the service or the receipt of the supplies. Under this statutory provision, therefore, you would not be authorized to make a payment of a certain per cent of the purchase price of an article at the time, say, when the order was given, and further payment of a certain per cent, when the shipment began to move from the contractors plant, etc. On the contrary the material must actually be received by the United States (although this receipt may be at the plant of the contractor if an inspector be sent there to receive it) before the payment may lawfully be made; and title must vest in the United States at the time of initial payment.

L. W. BLYTHE,
Lieutenant Colonel, Ordnance Department, National Army.
By F. J. KEELTY,
Major, Ordnance Department, National Army.

JULY 8, 1918.

Col. J. W. JOYCE,
Division T, Office of the Chief of Ordnance, United States Army,
Washington, D. C.

DEAR SIR: We have given careful consideration to the contract outline submitted to us on July 6 for operating the steam plant now being installed at the Warrior Plant for account of the United States Government. We have also had an opportunity to consult several of our directors on the subject and we are of the view that the contract outline is acceptable to this company in its major points, and in some of the minor points it is a matter of phraseology rather than meaning. I inclose herewith a copy of the memorandum as submitted to us under date of July 6 and beg to make the following comments:

Clause 1: In our original discussion on the subject of power production at the Warrior plant we called the attention of your Maj. Coombs to the fact that it was possible, although hardly probable, that some minor detail of installation essential to the operation of the plant with economy and reliability might have been omitted from the estimates, and that in such a case anything which was deemed reasonably essential to the highest economy of the plant should be furnished by the Government and installed under the terms of the existing understanding between yourself and the Power Co. The Power Co., however, does not ask that it shall be the judge as to what is or is not essential in this respect, but would willingly leave it to impartial authority on steam plant construction. The term facilities as used in your draft we shall assume therefore to cover this broadened interpretation

Clause 2: In none of the discussions held to date has the Power Co. considered the idea of paying any rental for the equipment and facilities supplied by the Government. Consequently the provision for 6 per cent interest or rental charge is a radical innovation involving fixed charges of some $12,000 to $15,000 per month. In our proposal of November 7 we had in view that the Government should pay for the installation and remain owner of it until such time as the Power Co. might recapture it.

Clause 3: As regards the terms of Clause 3, this is identical with our original proposition which we submit hereto. It should be made clear, however, that the amount of energy available to the United States shall be limited to the amount that the unit installed by the Government is capable of delivering under the operating conditions imposed by the Air Nitrates Corporation at Sheffield. The Power Co. is willing to reinforce such energy by power which it may have available from other sources, provided that the Air Nitrates Corporation shall conduct its operations so as not to adversely affect the service of our general system. This can easily be done and will impose no hardship other than reasonable care in the design and operation of the air nitrates plant.

Clause 4. This clause in its general sense is acceptable.

Clause 5. For reasons fully discussed upon the occasion of our last interview the power company can not stand a retention by the United States of 3 mills per kilowatt hour and pay the interest charge mentioned in clause 2. Under certain conditions, however, the company can possible agree to a retention of 2 mills per kilowatt hour, but this retention not to commence until the experimental period has passed and the plant is in normal operation, let us say from July 1, 1919.

Clause 6. The terms of this clause are generally acceptable.

Clause 7. The general terms of this clause are satisfactory to the company, except that the contract should be mutual. The period of three years within which the option is to be erercised should be extended to five years, and should cover so far as the company is concerned, a right to take over the transmission line. The terms under which the appraisal of the property is to be made are satisfactory to the company but the report of the appraisers should also determine the amount and period of the deferred payments.

Clause 8. This clause is acceptable.

Clause 9. This clause is acceptable.

Clause 10. This clause is acceptable.

Clause 11. This is acceptable so far as it goes. It should be stipulated, however, that adjustments for fuel costs are to be made when and as the changes in fuel cost occur and we suggest a figure of one-tenth mill per kilowatt hour for each 10 cents change in the price of fuel as determined by the Government. To this clause should be added provisions for a semiannual adjustment to meet variations in the cost of labor.

Clause 12. This is acceptable, but applies only to power delivered at the low tension side of the company's switchboard at the Warrior Plant.

Clause 13. At no time has there been any proposition on the part of the company to assume the cost of maintenance of the transmission line and it has not entered into the company's calculations. The company is willing, however, to undertake the maintenance of the transmission line for a fixed fee.

The period of this contract shall be for the duration of the war. Should at any time, however, any unforeseen circumstances beyond the control of the power company adversely affect the cost of operations the power company shall have the right to ask arbitration, with a view of being protected against abnormal and unforeseen increase in costs.

Returning to clause 2, the proposition to pay interest is going to be a severe burden on the company and unless satisfactory load and power factors are maintained by the Air Nitrates Corporation the company will be unable to earn any such charge. Under the circumstances we suggest that the rental be commuted into a certain amount per kilowatt hour supplied, and in any case not to commence prior to July 1, 1919.

In the early stage of our discussions you will remember that it was generally understood that the company should be entitled to use about 10,000 kilowatts of energy out of the unit to be installed, this to be in consideration of our investment in the site, the right-of-way, and the cost of connecting our general system into the Warrior Extension direct by high tension line so that any hydraulic and steam plants owned by the power company may be available as a reserve. This investment will amount very closely to $600,000.

This, I believe, covered our views as to the outline of the contract for the operation of the plant and we are ready to proceed at once with the definite contract.

Very truly, yours.

JAMES MITCHELL, *President.*

ALABAMA POWER CONTRACT OUTLINE RE WARRIOR POWER.

JULY 6, 1918.

(1) Thirty thousand kilowatt unit and other facilities to be installed at Warrior at the expense of United States. Also transmission line to Nitrate Plant No. 2. Both on property and right of way of Alabama Power Co.

(2) The Power Co. shall pay the United States, as annual rental for the use of the facilities provided by the United States hereunder, an amount equal to 6 per cent of the cost to the United States of the proposed facilities (exclusive of transmission line) during such periods as the United States may require from the Power Co. the service contemplated under this agreement; such rental payment to be made in equal monthly installments.

(3) Power Co. to operate the power plant at Warrior and to supply current for operation of United States Nitrate Plants No. 1 and No. 2, near Sheffield, Ala., at 7 mills per kilowatt-hour, delivered at the switchboards at such plants; 110,000 volts, 3-phase A. C. The amount of energy available to the United States for such operation is to be that corresponding to the capacity of such unit, and any other power which the Power Co. may have available for such use.

(4) During such periods as the United States shall require the service from the Power Co. above provided the United States shall guarantee a minimum payment for current to be supplied pursuant thereto of $25,000 per month.

The United States may discontinue the demand for such service on 60 days' notice at any time, in which event the United States shall, during the period of such discontinuance of demand, be relieved of the obligation as to minimum monthly payments hereunder, and the Power Co. shall correspondingly be relieved of the payment of rental for the facilities of the United States during the period of such discontinuance of demand for service, unless the period of any such discontinuance of service exceeds 60 days, there shall be no change in the minimum payment or rental charges.

Such service to be restored on 60 days' written notice by the United States, after which the minimum payment and rental charges shall become effective.

(5) The 30,000 kilowatt unit and other facilities and transmission line to remain the property of the United States, but of the above payment of 7 mills per kilowatt-hour, the amount of 3 (?) mills per kilowatt-hour is to be retained by the United States.

(6) When the amount so retained by the United States aggregates the amount of the cost to the United States of the 30,000 kilowatt unit and other facilities provided at the expense of the United States, and installation expense thereof, plus the cost to the United States (exclusive of the transmission line to nitrate plant No. 2) then the title to the 30,000 kilowatt unit and other such facilities (except the transmission line) to pass to the Power Co.

(7) The United States to have the option at any time not less than three years after the termination of the war or termination of the supply of power hereunder, whichever may be the later date, to elect that the Power Co. shall take over the 30,000 kilowatt unit and other facilities provided at the expense of the United States at a value to be determined by appraisal, such appraisal to take into consideration the value of the property to the Power Co. under the then conditions. The Power Co. to have a reasonable period to make payment of the amount due on account of such sale, not less than 5 years or more than 10 years; deferred payments to bear interest at the rate of 5 per cent and title to property to remain in United States until paid for in full. Credit to be given Power Co. for amounts retained under provisions of (5).

(8) Power Co. to assume full operating responsibility for the operation of the plant and to maintain apparatus in first-class operating condition, and shall make good any damages due to use, accident, or otherwise.

(9) Power Co. to agree to continue to supply power for the requirments of the United States at reasonable prices, taking into consideration capital investment, operating costs, and reasonable depreciation after recapture of property by Power Co.

(10) If the United States is prepared to furnish coal to Power Co. at a price lower than that on which energy rate is based, under adjustment clauses. Power Co. will accept such coal, on reasonable notice with reference to Power Co.'s obligations to accept coal from other sources. Energy rate to be adjusted correspondingly for power generated by coal so furnished by United States.

(11) Energy rate based on standard coal at $2.30 per ton. Adjustment up and down for variations in coal cost.

(12) Contract to become effective on 30 days' written notice by the United States, such notice to be given not later than December 1, 1918, provided the proposed facilities at Warrior are completed for operation at that time.

Temporary power to be furnished in the meantime on basis $12,500 per month per 1,000 kilowatt maximum demand, plus 5 mills energy charge, as provided in contract draft May 20, 1918.

(13) Transmission line to be maintained by Power Co., but policing transmission line to be at expense of United States.

——— ———.

WAR DEPARTMENT,
Washington, October 19, 1918.

THOMAS W. MARTIN, Esq.,
Alabama Power Co., Birmingham, Ala.

DEAR SIR: I send you a revised set of articles 1 to 21, with the exception of article 15, of proposed contract between the United States and the Alabama Power Co. in reference to electric energy to be furnished for the operation of certain nitrate plants. I think you will find articles 1 to 14 in almost exactly (perhaps in exactly) the shape in which they were left after we went over them together on the night of the 17th. If there are any changes you will discover them upon comparison with your notes. Article 15 I am not yet ready to send, for I have been unable to confer with Mr. Burchard. These articles are subject to further modification if this be found necessary.

Some of the articles between 16 and 21 are still in draft form. I shall be unable to send a revision of those following article 21 until I have had an opportunity to confer with Mr. Burchard. I have not yet learned when he will be in Washington again.

Respectfully,

WILLIAM WILLIAMS,
Lieutenant Colonel Ordnance Department,
United States Army.

OCTOBER 30, 1918.

LIEUT. COL. WILLIAM WILLIAMS,
Ordnance Department Building, Washington, D. C.

DEAR SIR: I inclose two redraft copies of the following articles:

Article 24, arbitration; article 25, disputes not covered by article 24; article 26, time delays due to causes beyond contractor's control; article 27, cancellation and termination before completion; article 28, measuring instruments, testing; article 29, approval by contracting officer; article 30, payments not subject to counterclaims; article 32, bond; article 33, revenue from housing, stores, etc.; article 34, contract nonassignable; article 35, service of notices; article 36, lien; article 37, definitions.

I hope to receive your suggested article 31, and further suggestions that may occur to you. Possibly then we can meet on Saturday or Monday next for a final agreement.

I am not prepared to say that article 27 is in acceptable form, but am sending my redraft for your consideration.

I also inclose your manuscript from which these copies are made.

There may be some other few changes in this draft which I will suggest at our meeting.

Very truly, yours,

THOMAS W. MARTIN,
Vice President and General Counsel.

[Telegram.]

NEW YORK, *October 31, 1918.*

Lieut. Col. WILLIAM WILLIAMS,
Room 200, Ordnance Department Building, Washington, D. C.

Further conferences seem advisable to agree upon all details of contract. Can you join use here Saturday or Monday?

THOMAS W. MARTIN.

WAR DEPARTMENT,
Washington, November 1, 1918.

ALABAMA POWER CO.,
120 Broadway, New York City.

DEAR SIRS: I wired you early in the day that I shall be in New York on Monday for the purpose of further discussing with you and Mr. Burchard your proposed contract with the Government in relation to the supplying of electric energy to certain United States nitrate plants.

I acknowledge receipt of articles 24 to 36 of this contract, which you sent me under date of October 30.

I now send you the first 15 pages with a few minor changes, mostly in the interest of smooth reading. On the second line of article 11 I have replaced the single subdivision of article 3 therein referred to, by two subdivisions, as you will see. The reason for this is apparent. Subdivision 3 (formerly C) was inserted subsequent to the first draft of article 11 P. If you are in accord with these corrections I have to suggest that you have these pages written off in final shape. I should like to have as many copies as possible made, up to eight—this upon the assumption that all of them will be reasonably clear.

Respectfully,

WILLIAM WILLIAMS,
Lieutenant Colonel, Ordnance Department, United States Army.

Mr. QUIN. Under what statute do you interpret it that this work was carried on?

Mr. MARTIN. There were two statutes, Mr. Quinn, passed prior to the execution and delivery of the contract. It has seemed to us that either one of those statutes; or, in fact, both of them, are connected with the authority for the execution of this contract in behalf of the Government.

Mr. QUIN. The act of 1916, under which this work was authorized, was the one on which the work contemplated on the 1st of December, 1917, was begun in accordance with your understanding with the Government?

Mr. MARTIN. No.

Mr. QUIN. Then, what act was that?

Mr. MARTIN. The act of 1916 was never considered as in any way related to this work, Mr. Quin.

Mr. QUIN. Under what act of Congress, then, was your work of the 1st of December, 1917, begun?

Mr. MARTIN. I only know what was stated to me by the Ordnance Department officials to be their position, namely, that they were proceeding under certain provisions of the general statutes appropriating funds for armament of fortifications.

Mr. QUIN. What act is that? Will you put that in the record right here?

Mr. MARTIN. There are several of those statutes, and here is a memorandum relating to them, which, I understand, was the authority for this work.

Mr. QUIN. Will you put that into the record?

Mr. MARTIN. Yes, sir; I will be very glad to.

(The statement referred to follows:)

[65th Cong., 1st sess., ch. 29, 1917, p. 199, June 15, 1917, 40 Stat. L., 199.]

AN ACT Making appropriations to supply urgent deficiencies in appropriations for Military and Naval Establishments on account of war expenses for the fiscal year ending June 30, 1917, and other purposes.

"For purchase, manufacture, and test of ammunition for mountain, field, and siege cannon, including the necessary experiments in connection therewith, and the machinery necessary for its manufacture at the arsenals, $367,000,000."

[Appropriations for fiscal year ending June 30, 1918, Oct. 6, 1917, 40 Stat. L., 367.]

"For purchase, manufacture, and test of ammunition for mountain, field, and siege cannon, including experiments in connection therewith, machinery for its manufacture, and the necessary storage facilities, $663,000,000: *Provided*, That the Chief of Ordnance, United States Army, is authorized to enter into contracts or otherwise incur obligations for the purpose above mentioned not to exceed $777,182,750, as in addition to appropriations herein and heretofore."

"Appropriation for armored fortifications, $80,725,000, passed March 28, 1918, in the same language, without the proviso as set out last above." (40 Stat. L., 482.)

"Appropriation of $1,325,776,685, passed November 4, 1918 (40 Stat. L., 1019, at 1031), in the same language as last above for fiscal year ending June 30, 1919, including necessary experiments in connection therewith, the machinery necessary for its manufacture, and storage facilities," etc.

"Appropriation of $2,000,000,000, passed July 8, 1918 (40 Stat. L., 871), practically the same language as for appropriation for fiscal year ending June 30, 1918.

"NOTE.—The above appropriations were by the act designated for ordnance. In this subdivision of the above-mentioned appropriations the acts carry with them other purposes for ordnance."

Mr. QUIN. All this money appropriated for fortifications for military purposes was money that was appropriated for military purposes?

Mr. MARTIN. Yes, sir.

Mr. QUIN. And if money was used out of that fund it was military money authorized by Congress?

Mr. MARTIN. Yes, sir.

Mr. STOLL. Mr. Martin, you are familiar with the act of 1916 that provided for these activities at Muscle Shoals by the Government?

Mr. MARTIN. Yes, sir; you refer to section 124 of the national defense act.

Mr. STOLL. The one that provided for the building of these plants and the development of Muscle Shoals.

Mr. MARTIN. I am familiar with that section of the act, Mr. Stoll.

Mr. STOLL. Under this section that says, "The plant or plants provided for under this act shall be constructed and operated solely by the Government, and not in conjunction with any other industry or enterprise carried on by private capital," do you think the Ordnance Department with that provision of law had any authority to make a contract with you to carry on these activities there?

Mr. MARTIN. That section of the act was not the authority under which those officers proceeded. Secretary Baker has testified to that effect before one of the committees of Congress, Gen. Williams has so testified, Col. Burns has so testified, and Col. Joyes has so testified, the officers of this Government who were directly responsible for this work. That was their treatment of the question throughout with us. Now, that is as far as I can answer the question.

Mr. STOLL. I did not ask you what they thought about it, but what you, as a lawyer, thought. What was that put in that act for?

Mr. MARTIN. I do not know; only I never understood that act had anything to do with this question. The money did not come from that source at all.

Mr. STOLL. What does this refer to, then?

Mr. MARTIN. The President was given the authority from Congress to designate certain plants that should be erected for the purposes of that act.

Mr. STOLL. This is a part of the act that provided for the activities at Muscle Shoals.

Mr. MARTIN. For those activities designated by the President.

Mr. STOLL. But I say this is a part of the act.

Mr. MARTIN. Part of section 124 of the act; yes, sir.

Mr. STOLL. And you say that they just ignored that entirely?

Mr. MARTIN. No, sir; I say this whole question we are considering was never considered as in any way having anything to do with that section 124.

Mr. STOLL. Why not?

Mr. MARTIN. Because of the very nature of the situation. The President did not designate Gorgas as a part of that nitrate plant. The President never initiated the authority under that act so far as it related to Gorgas. The whole authority under which the Ordnance Department proceeded——

Mr. STOLL (interposing). The transmission line leads right into plant No. 2, does it not?

Mr. MARTIN. Yes; so it does.

Mr. STOLL. Was not that designated by the President?

Mr. MARTIN. Plant No. 2?

Mr. STOLL. Yes.

Mr. MARTIN. I think not.

Mr. STOLL. What was designated by him?

Mr. MARTIN. Plant No. 1 and the Wilson Dam, according to my understanding.

Mr. STOLL. Your contention is that this had nothing to do with what the President designated?

Mr. MARTIN. Yes; and that was the treatment of it by the Government officials from the Secretary of War down, throughout. No one ever discussed it upon that theory. No one ever discussed the legal status that might arise by virtue of that act, whether they were law officers or not. No one ever considered it had anything to do with the question.

Mr. STOLL. Did you consult your attorneys in that respect or relative to that question?

Mr. MARTIN. I do not know that we ever discussed the question. I do not recall that we discussed it.

Mr. STOLL. You just ignored that section?

Mr. MARTIN. Because it had nothing to do with the question. The officers of the Government were not proceeding under that section.

Mr. GARRETT. Mr. Martin, who were your attorneys during the time of the negotiation of this contract?

Mr. MARTIN. I was general counsel for our company.

Mr. GARRETT. You were, yourself?

Mr. MARTIN. Yes.

Mr. GARRETT. Are you the general counsel now?

Mr. MARTIN. Yes; I am president and general counsel. I do not have very much time to devote to the legal side of our work, but I am still general counsel.

Mr. GARRETT. Then, the company was being advised by you?

Mr. MARTIN. Yes, sir.

Mr. GARRETT. As to whether it had——

Mr. MARTIN (interposing). And we had other counsel who came in at different times in this situation; for instance, Mr. Niel A. Weathers.

Mr. GARRETT. Who is he?

Mr. MARTIN. He is a lawyer who has been connected with us for many years.

Mr. GARRETT. Where does he live?

Mr. MARTIN. In New York.

Mr. GARRETT. Did you have any Alabama lawyers?

Mr. MARTIN. None outside of our own legal staff.

Mr. GARRETT. Is the Alabama Power Co. a New York corporation?

Mr. MARTIN. No, sir.

Mr. GARRETT. Or an Alabama corporation?

Mr. MARTIN. An Alabama corporation.

Mr. GARRETT. Where is its headquarters?

Mr. MARTIN. In the city of Birmingham.

Mr. GARRETT. Why was this contract executed in the city of New York if you had your headquarters in Birmingham?

Mr. MARTIN. It was because the Government officials who were conducting it were living either in Washington or New York, and the president of the company at that time lived in New York.

Mr. GARRETT. Did you not testify here two days ago that your minutes were prepared and this authority given your directors at a meeting in New York?

Mr. MARTIN. That is correct, Mr. Garrett. This meeting was held on the 4th of November in the city of New York. Our company has been authorized to transact business in the State of New York.

Mr. GARRETT. Where did you get that authority?

Mr. MARTIN. By complying with the laws of New York. We have an office in New York.

Mr. GARRETT. You have a branch office of the Alabama Power Co. in New York?

Mr. MARTIN. Yes.

Mr. GARRETT. Where are your minutes kept, in Alabama or in New York?

Mr. MARTIN. They are kept, an original in one place and a carbon in the other.

Mr. GARRETT. Where are the originals kept?

Mr. MARTIN. In Alabama.

Mr. GARRETT. And the carbons are kept in New York?

Mr. MARTIN. Yes.

Mr. GARRETT. What was there at Muscle Shoals before the erection of Dams Nos. 1 and 2 or before any activity on the part of the Government for war purposes; what physical properties were at Muscle Shoals before that time?

Mr. MARTIN. Before the nitrate plants were begun in 1917?

Mr. GARRETT. Yes.

Mr. MARTIN. I do not know of any properties that the Government had except its navigation canals, in connection with the Muscle Shoals.

Mr. GARRETT. Was there any other power plant there at that time?

Mr. MARTIN. Yes; there was a power plant and distribution system serving those communities of Sheffield, Florence, and Tuscumbia.

Mr. GARRETT. That plant was at Muscle Shoals.

Mr. MARTIN. Yes.

Mr. GARRETT. Where was that located?

Mr. MARTIN. I do not know. We have no connection with it.

Mr. GARRETT. Where is this power plant located with reference to Dam No. 2?

Mr. MARTIN. I do not know where that plant is located. There is a steam plant located in the the city of Sheffield, as I understand it, some two miles from that plant, so our engineer says.

Mr. GARRETT. There is no water-power plant there?

Mr. MARTIN. No, sir.

Mr. GARRETT. There was nothing of that kind at Muscle Shoals before the Government began this activity?

Mr. MARTIN. That is my understanding.

Mr. GARRETT. Then, there was nothing at Muscle Shoals, either steam or power plants, or any other activity, before the Government began this project of establishing nitrate plants.

Mr. MARTIN. There was a steam plant and distribution system supplying the needs of those communities for water and power.

Mr. GARRETT. You mean at Muscle Shoals?

Mr. MARTIN. Muscle Shoals, you understand——

Mr. GARRETT. I mean anywhere in the neighborhood of Plants 1 or 2.

Mr. MARTIN. Yes, sir; Dam No. 2 is in the corporate limits, I believe, of those communities. Florence is on one side and Sheffield on the other, and Dam No. 2 is in the corporate limits of one of those towns and possibly both, although I am not certain.

Mr. GARRETT. That was a steam-power plant?

Mr. MARTIN. There was a steam-power plant entirely distinct, of course, from Muscle Shoals.

Mr. GARRETT. That is what I am getting at.

Mr. MARTIN. It was a steam-power plant owned by the Sheffield Co. which was engaged in the generation and distribution of light and power for those communities, and having a street railway system.

Mr. GARRETT. But you had no connection with any power plant there of any kind?

Mr. MARTIN. No, sir.

Mr. GARRETT. You now own or your company owns the abutment rights on Dam No. 2, do they not?

Mr. MARTIN. No.

Mr. GARRETT. On Dam No. 3?

Mr. MARTIN. Yes.

Mr. GARRETT. You do not own anything down at No. 2?

Mr. MARTIN. No; we conveyed that to the Government.

Mr. GARRETT. How much did you own there that you conveyed to the Government?

Mr. MARTIN. I do not recall. We had some acreage there and we had the abutting sites at Dam No. 2 together with some of the flowage lands and we conveyed that to the Government for $1.

Mr. GARRETT. How long did you own that? When did you acquire it?

Mr. MARTIN. Some of those lands were acquired—they were acquired at different times between 1906 and 1915, at various times; I could not tell you without looking at the records.

Mr. GARRETT. What was your purpose in acquiring those lands if there was nothing over there at that time?

Mr. MARTIN. With the idea of water-power development, of course.

Mr. GARRETT. You intended to develop that at some future day?

Mr. MARTIN. Absolutely.

Mr. GARRETT. And that was your idea in acquiring this land?

Mr. MARTIN. Yes, sir.

Mr. GARRETT. Who was the first person that suggested to the Alabama Power Co. about the extension of your transmission line over there to the nitrate plant?

Mr. MARTIN. As I understand, the subject came up through conference between Gen. Crozier and Mr. Washburn.

Mr. GARRETT. Mr. Washburn?

Mr. MARTIN. Yes. Mr. Washburn was the president of the Cyanamid Co., which had the patents and methods for making air nitrates. The question was one of obtaining power in the event the Government should locate a nitrate plant at Sheffield.

Mr. GARRETT. Did not your corporation, the Alabama Power Co., write a letter to the War Department making inquiry as to the development of this property and the desirability of its development?

Mr. MARTIN. No.

Mr. GARRETT. And upon that letter——

Mr. MARTIN (interposing). No; it was this way, Mr. Garrett: Mr. Washburn and Gen. Crozier discussed the subject, and Gen. Crozier asked Mr. Washburn to get in touch with us and to have furnished to some official of the Government such data as we cared to submit on the subject of a temporary power supply for the nitrate plant. Thereupon a letter was written by the Alabama Power Co. to Col. Joyes submitting various information and data.

Mr. GARRETT. That was concerning the power you already had developed?

Mr. MARTIN. Yes; concerning a supply of power from our system in Alabama to the nitrate plant to be located at Muscle Shoals.

Mr. GARRETT. Have you that correspondence?

Mr. MARTIN. Yes; it is in the record.

Mr. GARRETT. I believe you just stated that Mr. Washburn was president of the American Cyanamid Co.?

Mr. MARTIN. That is correct.

Mr. GARRETT. And had formerly been connected with the Alabama Power Co.?

Mr. MARTIN. That is correct.

Mr. GARRETT. When did he sever his connection with the Alabama Power Co.?

Mr. MARTIN. He resigned all connection with this company in March, 1916.

Mr. GARRETT. How much stock did he own in the Alabama Power Co.?

Mr. MARTIN. He owned stock in our holding company. I think it was 1,000 shares.

Mr. GARRETT. I do not understand your answer. What do you mean by "holding company"?

Mr. MARTIN. That was the stock that was held by the public at that time. He held a thousand shares of stock in the company which controls this situation.

Mr. GARRETT. Did he have common stock or preferred stock?

Mr. MARTIN. Common stock.

Mr. GARRETT. What company is that which controls the Alabama Power Co.?

Mr. MARTIN. That is the Alabama Traction, Light & Power Co.

Mr. GARRETT. Where is that company located?

Mr. MARTIN. That company is domiciled in the Dominion of Canada.

Mr. GARRETT. Does not that company own the common stock of the Alabama Power Co.?

Mr. MARTIN. It does.

Mr. GARRETT. And does not the common stock control the Alabama Power Co.?

Mr. MARTIN. Yes.

Mr. GARRETT. Then, the Alabama Power Co. is controlled by this Canadian corporation?

Mr. MARTIN. Yes; but as I stated to you, the stock holdings of this Canadian company are largely held in America now. As a result of the war in Europe in 1914 there has been an entire change in the security status situation in our company, and the largest blocks of stock are held in America to-day, and the largest single block of stock is held in Alabama by citizens of Alabama.

Mr. GARRETT. Is that common or preferred stock?

Mr. MARTIN. Preferred stock, and all the preferred stock of the Alabama Power Co. outstanding, of course, ranks pari passu with the common, and is all held in Alabama.

Mr. GARRETT. What did you say is the name of the Canadian corporation that owns this stock of the Alabama Power Co.?

Mr. MARTIN. The Alabama Traction, Light & Power Co. (Ltd.).

Mr. GARRETT. Does it not still own a majority of the stock?

Mr. MARTIN. It owns all the common stock of the Alabama Power Co.

Mr. GARRETT. And the common stock is the majority of all the stock, common and preferred?

Mr. MARTIN. Oh, yes.

Mr. GARRETT. Do you know whether Mr. Washburn owns any stock in the Canadian controlling corporation or not?

Mr. MARTIN. He does not now own any stock in it.

Mr. GARRETT. Did he ever own any of it?

Mr. MARTIN. He did, as I have stated to you.

Mr. GARRETT. He owned his stock in that company?

Mr. MARTIN. Yes.

Mr. GARRETT. One thousand shares?

Mr. MARTIN. Yes; 1,000 out of $18,000,000. I would just like to say that for many years the Alabama Power Co.'s board of directors has consisted from time to time of varying numbers, but at the present time we have, as I recall, 12 directors, 10 of whom live in this country, and the majority of whom live in Alabama.

Mr. DENT. How many live in Alabama?

Mr. MARTIN. I think there are 7 of the 10 who are living in Alabama. The directors' meetings are usually held there, and all the policies of the company are fixed by this board and have always been fixed by this board.

Mr. GARRETT. The emergency officer who made the contract with your company was a New York lawyer, also, was he not?

Mr. MARTIN. Col. Williams.

Mr. GARRETT. Before entering the service?

Mr. MARTIN. Col. Williams was a New York lawyer; yes.

Mr. GARRETT. Do you know whether or not he owned stock in the Canadian corporation or the American Cyanamid Co.?

Mr. MARTIN. I know that he did not.

Mr. GARRETT. You know that he did not?

Mr. MARTIN. Yes.

Mr. GARRETT. Did you get that information from him?

Mr. MARTIN. No, sir. I never heard of his name and never knew the gentleman before he came into the situation, and I have heard nothing from him since he concluded the contract; but if he had had any stock, I would have known it. I would have heard something of it. Of course I can not speak of the Cyanamid Co. finally, but I never heard of his having any stock in it, and I do know he never had any stock in our company.

Mr. GARRETT. How long has your company maintained offices in New York?

Mr. MARTIN. We opened an office there, as I recall, in 1912 or 1913.

Mr. GARRETT. In 1912 or 1913?

Mr. MARTIN. Yes, sir.

Mr. GARRETT. And you have those offices now?

Mr. MARTIN. Yes, sir.

Mr. GARRETT. Who is in charge of them?

Mr. MARTIN. We have an assistant secretary in charge of them.

Mr. GARRETT. What is the purpose in maintaining those New York offices now?

Mr. MARTIN. Well, our banking relations are conducted in New York. We constantly must have touch with bankers to obtain funds with which to make our developments. All of our funds are raised in America and have been for many years, and we maintain that office as a matter of convenience, if not necessity, to keep in touch with our business relations in New York. Formerly Mr. James Mitchell was president of our company until his death two years ago, and lived in New York, and, of course, that was an additional reason.

Mr. GARRETT. Does anybody else occupy the New York office in conjunction with your company at this time?

Mr. MARTIN. Yes; there are two or three different concerns that occupy the office.

Mr. GARRETT. Have they any connection with any of these other corporations?

Mr. MARTIN. No; none at all.

Mr. GARRETT. Then as general counsel for the Alabama Power Co. and as its president you really are the one who drew this contract?

Mr. MARTIN. I was not president at that time. Mr. James Mitchell was president of the company.

Mr. GARRETT. You were the general counsel?

Mr. MARTIN. Yes; I was the general counsel.

Mr. GARRETT. At that time?

Mr. MARTIN. Yes.

Mr. GARRETT. And you were the one who drew this contract?

Mr. MARTIN. Well, in behalf of our company, I participated in working it out.

Mr. GARRETT. Now, just getting right down to between us boys, right across the table here, you are the man who wrote this contract out yourself, are you not?

Mr. MARTIN. No, sir; I am not.

Mr. GARRETT. Well, who did write it out?

Mr. MARTIN. The contract, naturally, was evolved from time to time from 1917 to its execution. You have got to go back to the beginning to get the fundamental basis of it.

Mr. GARRETT. I understand that, and am going back to the beginning, but you were operating there without any written contract executed.

Mr. MARTIN. That is right.

Mr. GARRETT. Until the 7th of November, and on the 7th of November you finally got this contract signed, and yet during all this time your company had been doing over $5,500,000 worth of work that the Government was paying for.

Mr. MARTIN. Yes.

Mr. GARRETT. And it was all being done just simply by a common understanding after the 1st of December——

Mr. MARTIN (interposing). Just as hundreds of others were done, because we were doing a job of work and the question of contract, both to the Government officials and our company, was of less importance than getting the thing done that the Government officials wanted done.

Mr. GARRETT. Then, if you were perfectly willing to do all that without a contract up to the 7th of November, why did you not say, "We will leave it all to the Government until the end of it," and why did you come in and get your contract hurriedly signed in the State of New York away from the residence of your company?

Mr. MARTIN. It was not hurriedly signed in New York. The engagement was made to complete the contract before any question of the armistice came up. Col. Williams asked us to come to New York and execute it. That is where he was working, either in New York or Washington, and the armistice had nothing to do with it. Naturally, the contract relations had to be defined. It was of importance to the Government that it should have a contract. It was of importance to us that we should have a contract. If the Government had no contract with us by which we were to buy the property at fair value, the Government's only right was to remove the property from our land, and it was of great importance to the Government, of course, to have a contract.

Mr. GARRETT. I fail to see how much advantage or what the advantage of this contract is to the Government when they signed a contract there to construct five and a half million dollars worth of valuable property on your land and then agreed with you that you should be the only purchaser.

Mr. MARTIN. At a fair value. I will ask you this question, then: How was the Government going to adjust its rights with us if they had no contract and had erected fixtures on our land?

Mr. GARRETT. In the first place, you seem to forget, Mr. Martin, that the Government had a right at the time of the war to go down there and put this plant wherever it pleased, on your land or on anybody else's land, and to take your land for that purpose, if it wanted to?

Mr. MARTIN. I do not deny that at all.

Mr. GARRETT. It had a right to commandeer you and commandeer your power company.

Mr. MARTIN. Absolutely; and the Government could do it, of course.

Mr. GARRETT. But the Government, it seems, did not do that, but sent an emergency officer down there who made a contract, and you claim now that the Government is tied up——

Mr. MARTIN (interposing). No; I do not claim——

Mr. GARRETT (continuing). So that it must sell this property to you at a fair value, whatever your fair value is, and if it does not do that it must tear down $5,000,000 worth of stuff and move it somewhere else.

Mr. MARTIN. No, sir; the contract speaks for itself.

Mr. GARRETT. With what bank do you do business in New York?

Mr. MARTIN. We have accounts in two or three of the banks there.

Mr. GARRETT. In the National City?

Mr. MARTIN. No; we have no account with the National City.

Mr. GARRETT. Did you have during this time?

Mr. MARTIN. No.

Mr. GARRETT. Through what banks in New York did these Government funds pass?

Mr. MARTIN. I have not the slightest idea.

Mr. GARRETT. You do not know anything about that?

Mr. MARTIN. No, sir.

Mr. JAMES. Your minutes show that under date of November 9, 1918, Lieut. Col. Williams designated Col. Joyes to act in his place, do they not?

Mr. MARTIN. Our minutes?

Mr. JAMES. Yes.

Mr. MARTIN. No; I think there is a letter or memorandum attached to the contract, Mr. James. As I understood, that was after the contract was executed on the 7th of November, as I recall, and was made by Col. Williams, who surrendered in some formal way his connection with the contract to Col. Joyes. That is my recollection of it. It was explained to me that whatever authority he had in connection with it was passed along to Col. Joyes to administer.

Mr. JAMES. If the contract was signed on the 7th, why would there be a communication to you on the 9th?

Mr. MARTIN. There was no communication with us on the 9th, as I recall.

Mr. JAMES. Why would there be a communication from Col. Williams to Col. Joyes designating him as the contract officer two days after the contract was signed?

Mr. MARTIN. I think that was a formality in the Army circles of passing authority for either contracting or administering the contracts from one to another. I can not speak of that.

Mr. JAMES. I was wondering whether the contract was really signed on the 9th.

Mr. MARTIN. I think it was on the 7th, for the reason that that was the day, as I find on looking it up, of the false report of the armistice. Therefore I think it was the 7th on which the contract was executed. That is a matter that can be very easily verified from public information and from public records.

The CHAIRMAN. Mr. Martin, can you tell us what date the Dent Act was passed validating these various contracts?

Mr. DENT. Yes, sir; March 2, 1919. I have the act here, Mr. Chairman.

The CHAIRMAN. I just wanted to fix the date that law was passed because there was a great many contracts that the Government had entered into with private individuals; the officers for the Government or the private individuals failed to execute the contracts under the laws of the land, and it was held by the War Department that not having been properly executed, the parties could not be paid. Therefore, this law was passed so as to allow them to have the contracts executed, notwithstanding they had not been properly executed before the parties entered into the work.

Mr. MARTIN. That is it.

The CHAIRMAN. Your contract with the Government seemingly was also entered into because something had been left undone that should have been done to make the contract valid; is that your recollection?

Mr. MARTIN. There was no contract, Mr. Chairman, finally, no final meeting of the minds of the parties until this contract was signed in November. That is about the best way I can express it, I suppose.

The CHAIRMAN. As I understand you, you testified here that although the contract was entered into on the 1st of December, 1917, it was in the nature of letters that passed between your company and the officials of the War Department?

Mr. MARTIN. Now, Mr. Chairman, I have collected various letters and data since I was here the other day, and I would just refer to one or two of these things. I have in my hand a written memorandum dated December 3, 1917, by Col. Joyes.

The CHAIRMAN. He was the officer of the War Department.

Mr. MARTIN. Yes, sir. This memorandum is headed, "Suggested basis for contract between Alabama Power Co. and United States for power for Air Nitrates Corporation plant at Sheffield."

This is at the top of the memorandum, which I will hand to the reporter. It enters into various questions which, in substance, found their way into the contract. The concluding clause of the memorandum says:

"After June, 1921, or later date of cessation of United States' participation in present war, the United States owned transmission line and power apparatus and temporary building, etc., to be leased or sold to Alabama Power Co., if law permits and if satisfactory agreement on price, and if not, all property of United States to be removed within, say, six months from premises and right of way of Alabama Power Co. at United States expense, the Government to commandeer power from Alabama power system when necessary to deprive other customers in order to supply Government under any provision hereof."

You will note it says, "if law permits, and if satisfactory agreement on price," is agreed upon. Before any work was done that was the suggested basis.

Mr. GARRETT. Is that signed?

Mr. MARTIN. That is not signed.

The CHAIRMAN. You say that letter was sent or handed to you?

Mr. MARTIN. It was the result of a conference, Mr. Chairman, between Col. Joyes and our president, Mr. Mitchell. It was not signed, but reference was made to it in one or two of the letters which shortly followed from Col. Joyes to our company, directing us to construct the transmission line and to construct this Warrior extension.

The CHAIRMAN. To whom did Col. Joyes, or whoever was acting for the Government at that time, hand that letter?

Mr. MARTIN. To the Alabama Power Co.

The CHAIRMAN. Which one of the Alabama Power Co., or who representing the Alabama Power Co.?

Mr. MARTIN. Mr. James Mitchell represented the Alabama Power Co. as president, and I was present at some of the conferences as counsel.

The CHAIRMAN. Were you present when that letter was handed to the Alabama Power Co.?

Mr. MARTIN. I can not state I was present, specifically, but I think I was, Mr. Chairman. It has been so long ago—that has been five years now.

The CHAIRMAN. You say it was not signed by any representative of the Government?

Mr. MARTIN. No.

The CHAIRMAN. But you began to act on it?

Mr. MARTIN. Here is what happened on the 7th of December.

Mr. CROWTHER. I wanted to ask about that phrase which says "if the law permits." Did the law at that time permit?

Mr. MARTIN. It did not, and it is my understanding that there was no authority at that time, except his, that we understood there was some such provision.

On the 7th day of December there followed this order:

"ALABAMA POWER CO., *Birmingham, Ala.:*

"By authority of the Chief of Ordnance you are hereby given an order to construct"——

The CHAIRMAN. Pardon me; that was on December 7?

Mr. MARTIN. Yes, sir.

The CHAIRMAN. That would be December 7, 1917?

Mr. MARTIN. That is correct. Mr. Chairman. It says:

"By authority of the Chief of Ordnance you are hereby given an order to construct on lands owned by you or rights of way under your control from your steam-power plant on the Black Warrior River to the site of the proposed ammonium nitrate plant of the Air Nitrates Corporation at Sheffield, Ala., for the present known as the United States Nitrate Plant No. 2, a transmission line for the purpose of, and of proper capacity for transmitting electric current of 3-phase, 60 cycle, and about 110,000 volts. This line to be built as economically as possible, being for the temporary use of the United States in transmission of power during the period of the present war, or thereabouts. The line to be the property of the United States, and suitable arrangements to be made as already tentatively agreed upon to cover the payment of actual cost plus a percentage thereof, to cover use of Alabama Power Co.'s lands, right of way, construction forces, and other facilities, etc., and profit. All these conditions to be embodied in a future contract.

"Priority Class A–1 has been requested from the War Industries Board for the manufacture of this material, copy of which is inclosed, so that delivery may be made at the earliest possible date.

"Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and promptly acknowledge receipt thereof."

That was signed by Col. Joyes under date of December 7, 1917. We accepted that.

The CHAIRMAN. You accepted it?

Mr. MARTIN. Yes; our company under date of December 7, acknowledged receipt of that order and said, "In accordance with your instructions, we are proceeding to book this order as a definite order on behalf of the Ordnance Department, United States Army, and will proceed as speedily as possible toward carrying out your instructions."

The CHAIRMAN. As I recall your reading, the line was to belong, or the work you were to do there was for the United States Government, and it was to belong to the United States Government.

Mr. MARTIN. That is correct, Mr. Charman, on land or sites that are owned by us or under our control.

The CHAIRMAN. You accepted that and proceeded?

Mr. MARTIN. We accepted that and proceeded, yes. On the 7th of December there was issued another order to us.

The CHAIRMAN. December 7, 1917?

Mr. MARTIN. Yes; the same date. This is headed "Purchase order on:" It says:

"ALABAMA POWER CO.,
"*Birmingham, Ala.*

"By direction of the Chief of Ordnance you are hereby given an order to furnish certain electric power as specified hereafter to the United States Nitrate Plant No. 2 being constructed for the United States at Sheffield, Ala. (Muscle Shoals), by the Air Nitrates Corporation of New York, viz:

"Upon completion of the transmission line from your Warrior plant to the United States Nitrate Plant No. 2, at Sheffield, expected to be by or soon after June 1, 1918, which you are to construct under my order XOT–154, you to furnish from any resources of your system a guaranteed 10,000 kilowatts and as much more as may be available without interfering with your present signed customers, or requiring operation of the Birmingham steam plant, and as the United States may require, at certain rates tentatively agreed upon and to be embodied in contract to be signed directly.

"Also, upon completion of the addition to your Warrior steam plant to be built by you for the United States, as per contract to be signed directly and as covered by my order XOT–155, which completion is expected to be about August 1, 1918, you to furnish from said Warrior steam plant as a whole, including your present plant and the United States temporary additions thereto, on the basis of an equitable division of the cost of operatiang that plant, a firm quantity of 35,000 kilowatts or so much thereof as may be needed by the United States, undertaking to assure this quantity of power by your power resources other than the Warrior steam plant, the conditions of such assurance and of the basis of distribution of costs to be more particularly set forth in contract now tentatively agreed upon and to be signed directly.

"Priority Class A–1 has been requested from the War Industries Board for the electrical power (copy of which is inclosed).

"Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned and promptly acknowledge receipt thereof."

That was on the 7th of December.

The CHAIRMAN. That was another case where you were to do certain things for the oGvernment of the United States?

Mr. MARTIN. Yes, sir; which we accepted.

The CHAIRMAN. And you proceeded to carry that out?

Mr. MARTIN. Yes, sir; we carried it out.

The CHAIRMAN. Did the Government of the United States take possession of these things?

Mr. MARTIN. They had officers there who were directing what was to be done under this contract, but we proceeded in accordance with Col. Joyes's order.

The CHAIRMAN. Col Joyes in this communication said you were to do these things for the United States Government?

Mr. MARTIN. Yes.

The CHAIRMAN. He did not say you were to do them for the Alabama Power Co., but you were to do them for the Government of the United States?

Mr. MARTIN. Yes.

The CHAIRMAN. And you proceeded to carry that out?

Mr. MARTIN. We proceeded to carry that out. On the 7th of December, the same date there was the third of these purchase orders which had to do with this Warrior extension, in the same phraseology, substantially, as those which I have already read. That order says:

"ALABAMA POWER CO.,
"*Birmingham, Ala.:*

"By direction of the Chief of Ordnance you are hereby given an order to procure and install for the United States as a temporary addition to the steam-power producing facilities at your Warrior River plant in Alabama, and to enable you to supply to the United States nitrate plant No. 2, being constructed at Sheffield, Ala., by the Air Nitrates Corporation for the United States, the supply of power contemplated by a separate purchase order XOT-156 of even date herewith, as follows:

"1. Thirty-five thousand kilowatt turbo-generator unit, with suitable accessories, as condensers, switchboards, battery of boilers, etc., directly necessary to its service, and such auxiliary accessories as may be needed in addition to what you now have installed, or should properly put in for the portion of your plant now existing, which may be necessary for the operation of this plant as a whole, and approved by the undersigned.

"2. Spare turbo-generator, of approximately 35,000 kilowatts, as above, with the necessary accessories, not including steam-producing equipment, as may be necessary to enable this unit to take the place of the first unit mentioned above, in the event of temporary unserviceability thereof, as recommended by you and approved by the undersigned.

"Also to install the foregoing upon your existing land and foundations, etc., and to erect thereover a temporary building for the production of such apparatus.

"*Provided*, That all of the foregoing work is to be performed by you on the basis of reimbursement of actual cost, plus a construction fee in consideration of which you will allow without special rental or similar charges therefor, the use of your land, foundations, and other property as needed—all such conditions to be embodied in a contract now tentatively agreed upon and to be signed directly.

"Priority Class A-1 has been requested from the War Industries Board for the construction of this temporary addition to power plant (copy of which is inclosed).

"Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department United States Army by the undersigned, and promptly acknowledge receipt thereof."

The CHAIRMAN. That, again, I take it, contained instructions to your company to build a transmission line for the Government of the United States?

Mr. MARTIN. This says, "by direction of the Chief of Ordnance, you are hereby given an order to procure and install for the United States as a temporary addition to the steam power producing facilities at your Warrior River plant in Alabama, and to enable you to supply to the United States nitrate plant No. 2 being constructed at Sheffield, Ala., by the Air Nitrates Corporation for the United States, the supply of power contemplated by a separate purchase order." The first one I read described the equipment.

The CHAIRMAN. You carried out that order?

Mr. MARTIN. Yes, sir.

The CHAIRMAN. I understand the situation now.

Mr. WURZBACH. Mr. Martin, I understand that it was your impression that the law of 1916, the national defense act, did not carry with it any authority to enter into the contract that was signed on November 7, 1918.

Mr. MARTIN. I said that the work was not initiated under section 124 of the national defense act.

Mr. WURZBACH. Did you not also state, and will you not state now, that it is your opinion as a lawyer that that law of 1916 did not give any authority for this contract, which you are claiming under?

Mr. MARTIN. Yes; the law of 1916 did not have anything to do, one way or the other, with this question.

Mr. WURZBACH. You knew that in 1917, when you first began this matter?

Mr. MARTIN. Yes, Mr. Wurzbach. This whole question of authority was, as we understood, held in abeyance. The only law which had to do with this question was an act of 1892, under which the Secretary of War might make temporary leases of Government property. But when it came to authority for carrying out this work it was under certain provisions of acts of Congress making appropriations for armament and fortifications. Col. Joyes took the position that under that there was the authority for doing this work and there was the appropriation for paying for it, as I understood it.

Mr. WURZBACH. But I am asking you as a lawyer, and as counsel for the Alabama Power Co., this question: You yourselves recognize that there was no legal authority for this contract that was later signed in November, 1918?

Mr. MARTIN. To this extent, that at that time Congress had not conferred the power, as we understood it, upon the executives of the Government to dispose of property created during the emergency. That was the status of it at that time. Later, as we see it, two acts of Congress were passed——

Mr. WURZBACH. I want to come to those acts a little later. Exclusive of the acts of May, 1918, and July, 1918—exclusive of those two acts, and keeping in mind only the existing law, in December, 1917, you, as a lawyer, recognized that there was no authority for entering into this kind of contract that was later signed in November, 1918?

Mr. MARTIN. No; I will go this far with that: I recognized, as a lawyer, that there was no authority in the Government to agree to sell that which was created. There was authority in the Government, first, to go and create that which was necessary to supply its armament of its fortifications, and that was the theory on which Col. Joyes proceeded.

Mr. WURZBACH. It is not that feature of the contract, as pointed out by the chairman of the committee, that we are referring to. I am referring to the provisions in the contract under which you are claiming, that were supposed to put obligations on the Government that you are claiming under. I recognize the right to order certain work in the military department. But in reference to the giving of your company an option which you are now claiming under, you recognize that there was no law in December, 1917, authorizing that kind of a contract.

Mr. MARTIN. On that, Mr. Wurzbach—as I read to you in the very initial draft of this contract by Col. Joyes, he so expressed it, and all along it was treated in this light, that if the law permitted the property to be disposed of, as proposed at first. Later on this provision arose——

Mr. WURZBACH (interposing). In May and July, 1918?

Mr. MARTIN. In May and July.

Mr. WURZBACH. I will ask you this question first: Knowing that, did you not have in mind, as the attorney for the company, the necessity for further legislation making this agreement legal?

Mr. MARTIN. I did not give any consideration to that, because it was just the natural discussion of the subject at that time that Congress would have to pass legislation of some character because this was one of thousands of cases, which you will find on examining the records of your committees, which came up. There were hundreds and hundreds of contractors for equipment, concerns who manufactured all kinds of equipment, who proceeded in the same way, erecting property for the account of the Government on their own lands.

Mr. WURZBACH. You knew the necessity for further legislation in order to protect your rights or your equity?

Mr. MARTIN. Of course, it was necessary for further legislation if we were to buy the property, but the Government also agreed in this initial memorandum, or Col. Joyes proposed in this initial memorandum, that if the law did not permit the Government to sell it to us, then the Government would remove the property from our lands, because we could not agree to sell the lands without destroying our plant. We were perfectly willing to agree to buy on the demand of the Government, and Col. Joyes recognized the fairness of the Government agreeing to remove the property if the Government did not sell it to us.

Mr. WURZBACH. I think you stated that the biggest part of the work was completed in about five months after you started the construction of the transmission line?

Mr. MARTIN. The transmission line was completed and in operation in the early part of May, 1918. The turbo-generator and the other facilities at the

Warrior extension were completed toward the end of the year. But meantime we supplied the power requirements of the Government over this line from our system pending the completion of the Warrior extension. That was the order Col. Joyes gave us.

Mr. WURZBACH. The main part of this work was completed before these acts of Congress of May and July, 1918?

Mr. MARTIN. No; the transmission line represented about one-fifth of the total cost, but I should say probably 40 per cent of it was completed when these acts were passed.

Mr. WURZBACH. Did you know when this legislation was enacted? Were you in touch with any Member of Congress with reference to this legislation?

Mr. MARTIN. No. The only thing I knew about the legislation was after it was passed in August. Capt. Noble handed me a copy of a general order issued by Gen. Goethals which I have read into the record, and which I understood was founded on these acts of Congress. That was an order, or a bulletin, rather, issued by Gen. Goethals.

Mr. WURZBACH. You did not find that out until August, 1918?

Mr. MARTIN. August, 1918.

Mr. WURZBACH. You testified in response to questions just asked you by the chairman of the committee with reference to certain letters that were considered by you as part of the contract which was later signed in November, 1918.

Mr. MARTIN. These work orders which I have referred to were issued to us and formed the basis upon which we proceeded.

Mr. WURZBACH. Under which you proceeded to do certain work for the Government. Have you any correspondence covering any of the other provisions of the contract as it was finally signed?

Mr. MARTIN. I have a lot of correspondence here, probably 50 sheets of it, and they do cover various features of it.

Mr. WURZBACH. Do they refer to the compensation this company was to receive?

Mr. MARTIN. I have not been over the correspondence to see, but I have filed it with the reporter.

Mr. WURZBACH. Do they refer to the provisions of the contract with the Government that gave you authority to buy this property from the Government at a fair price?

Mr. MARTIN. I do not recall. I suppose they do refer to that question in some form, of course.

Mr. WURZBACH. All of the provisions of the contract were verbally agreed upon, or you had some correspondence about them before November 7, 1918?

Mr. MARTIN. Yes; I think it might be considered in that way. It is a question where different officers had different ways of expressing it. Capt. Noble had one way of writing the contract and Col. Williams had an entirely different way. When he came into it he redrafted the contract. Capt. Noble had put it into two contracts, one for construction and one for operation, and Col. Williams entirely changed the theory of the contract and made an entirely new contract. This is the contract which was signed.

Mr. WURZBACH. I suppose you had considerable correspondence with the legal representatives of the Government with reference to the drafting of this contract?

Mr. MARTIN. Yes; there was one as recent as November 1, 1918, inclosing certain parts of the contract, and another one——

Mr. WURZBACH (interposing). Have you included in that all the correspondence and the data which would throw any light on that?

Mr. MARTIN. Here is another of October 19.

Mr. WURZBACH. Together with copies of letters which you read?

Mr. MARTIN. Yes, sir.

Mr. MCKENZIE. Forgetting the contract for a moment, I want to ask you a few questions at this time, thinking perhaps I may not get another opportunity, in connection with the practical proposition with which we are confronted, having in mind that the Committee on Military Affairs, under the leadership of our chairman, has been endeavoring for months to aid the War Department in disposing of what we might call surplus property. I am going to assume in asking these questions that your company and you were animated at the time of this transaction by the highest and most patriotic motives, the country being in war, and assuming that you as an American citizen are still so animated, so far as the interests of our Government are concerned.

With that statement I want to ask you a few questions.

What was the cost of the plant? You testified to that, but I want to get that here. What was the cost of the plant at Gorgas?

Mr. MARTIN. The Government extension?

Mr. MCKENZIE. Outside of the transmission line. If you have not those figures here you can insert the cost in the record.

Mr. MARTIN. It is contained in the Secretary of War's memorandum, which he has filed.

Mr. MCKENZIE. It was something over $3,000,000, was it not?

Mr. MARTIN. Yes.

Mr. MCKENZIE. And the cost of the transmission line was about how much?

Mr. MARTIN. The cost of the transmission was $905,000.

Mr. MCKENZIE. The cost of the plant was between three and four million dollars?

Mr. MARTIN. Yes.

Mr. MCKENZIE. That work was carried on under very abnormal conditions, and we all understand that.

Mr. MARTIN. Yes.

Mr. MCKENZIE. It was a cost-plus contract proposition. What would you say would be a fair discount from that sort of cost to a normal cost?

Mr. MARTIN. As I stated on Friday, one of our engineers has stated that the present cost of reproduction is about 70 per cent of the cost in 1918.

Mr. MCKENZIE. About 70 per cent?

Mr. MARTIN. Yes.

Mr. MCKENZIE. Do you think that would be a fair estimate; is it your judgment that there was not more than 30 per cent wasted in extravagance during the war in the construction of these various plants?

Mr. MARTIN. I would not like to put it in that form.

Mr. MCKENZIE. I mean under the conditions that seemed to be necessary, it seems to me 30 per cent would be a very fair estimate of the extra charge. I have been under the impression it was more than that—perhaps 40 per cent.

Mr. MARTIN. You can not call 30 per cent wastage, for you must remember there was an abnormal price level during that time, and we worked under military supervision; that we had guards at the plant, that we had the 8-hour labor law, that we had the holidays to consider; we had all the incidents of governmental supervision and work.

Mr. MCKENZIE. I had all of that in mind.

Mr. MARTIN. As to what enters into that 30 per cent——

Mr. MCKENZIE (interposing). I wanted you to take that into account, to keep in mind, or to consider in your statement the very liberal amount that would be what we might call an overcharge over what it would cost in ordinary normal times.

Mr. MARTIN. To reproduce that plant to-day under present price levels, you could probably reproduce it for 70 per cent of the cost in 1918; that is, under private operation, under private construction, without Government supervision, as a private, going concern that knew its business.

Mr. MCKENZIE. Without the connection with Muscle Shoals the transmission line beyond the town of Jasper, I take it, would be of little use to your company?

Mr. MARTIN. Mr. McKenzie, we have this situation: We have a large power distribution in the northern section of Alabama in the Huntsville and Decatur districts; we have a single line serving them from the eastern section of our State from a point known as Gadsden, and the public service commission of our State has been endeavoring for a long time to get us to furnish in some way a duplicate service to these two districts, and we have stated to them we hoped to work out that duplicate service over this transmission line from Warrior to Sheffield and over to Decatur. It will add very substantially to that public service if we can work that out, and it has been our purpose, if we can work out an arrangement with the Government to have this duplicate service for the northern part of Alabama.

Mr. MCKENZIE. It would be of value to your company?

Mr. MARTIN. It would be of value to our company, and it is a matter that has come up many times with the public-service commission of the State.

Mr. MCKENZIE. Now, Mr. Martin, your company is engaged in the manufacture and production and sale and transmission of this current over that section of the State of Alabama?

Mr. MARTIN. Yes.

Mr. MCKENZIE. And your corporation, as I understand it, is a going one, and at Gorgas you had laid the foundations for a much larger plant than you had

at the time of the breaking out of the war, having in mind the development and increase of your business; is that not true?

Mr. MARTIN. That is true.

Mr. MCKENZIE. Now, I want to ask you, having in mind the Government's desire to dispose of this property, having in mind what it would cost to replace that property, having in mind your desire, as an American citizen, to be fair with your Government, I want to know, if you are willing to state it—and your company realizing that this is tangible property, valuable to you, whether or not you would be willing to pay to the Government at this time, when we are undertaking to unload many of these things we have no immediate necessity for, 70 per cent of what this plant cost? I am not talking about the contract; I am not talking about the connection of Mr. Ford or anybody else. I am just talking to you as the representative of this great corporation, dealing with the Government, having here a piece of property that has a value to you.

Mr. MARTIN. Yes; it has a value to us.

Mr. MCKENZIE. Bearing in mind the equities and the endeavor to do justice, would your company be willing to take over this plant at 70 per cent, or 60 per cent—and I have had so much experience in investigating cost-plus contracts that I would be willing to say right off if you took off 40 per cent you perhaps would not be far out of the way—would you be willing to give the Government 60 per cent of what the Government has invested there, which would be for your benefit?

Mr. MARTIN. Mr. McKenzie, you must bear this in mind: We have a contract——

Mr. MCKENZIE (interposing). I am forgetting that contract.

Mr. MARTIN. Can we forget it, when we are here under an agreement to purchase the property at a fair value, to be established by arbitration?

Mr. MCKENZIE. Would not that be a fair value?

Mr. MARTIN. If the arbitrators set up that value, of course, we would have that value.

Mr. MCKENZIE. You are a business man.

Mr. MARTIN. I feel that question is one which now must be settled by arbitration. You and I are not arbitrating the price at which this property would be taken over. If we were arbitrating the case we could bind the Government and the company to do a certain thing. But we can not. You are asking a question which goes right to the performance of the arbitration part of the contract. But we are willing to——

Mr. MCKENZIE (interposing). The question gets right down to brass tacks.

Mr. MARTIN. We will carry out the contract, whatever the price set by the arbitrators may be. Furthermore, you have raised that question, and it is also involved in the proposition we have made to the Government as bearing on the whole situation.

Mr. MCKENZIE. I am asking these questions because we do not know what is going to be the outcome of this proposition. But I did think that perhaps you might be willing to make a statement, as a business man, that would get away from that haze and that mist which you involved this proposition in by speaking of a fair value. I think it has been brought out in these hearings that this property has absolutely no value to anybody except the Alabama Power Co.

Mr. MARTIN. It has a fair value to us. The value it has to us is different from the junk value; it is a fair value which not every competent man can settle, and that is the basis on which we have agreed to take it. I would not like to express in dollars exactly what that would be in our judgment, because it is naturally one for these arbitrators to settle.

Mr. MCKENZIE. I can not speak for the Government; I am only one citizen.

Mr. MARTIN. That is true, and if the Secretary of War is given the authority to speak for the Government we will deal with him.

Mr. MCKENZIE. I can not bind the Government, but viewing this situation as I do I would be glad to enter into some proposition to sell this property to you if I had the power, if you showed a disposition to pay for it what is right and fair.

Mr. MARTIN. We certainly have a disposition to pay that which is fair, because we are under contract to do it.

Mr. MCKENZIE. I wish you would think about that 60 per cent proposition.

Mr. STOLL. In case the Government should let you have this property according to your contract, have you any set-offs against the Government?

Mr. MARTIN. Set-offs?

Mr. STOLL. Yes.

Mr. MARTIN. No.

Mr. STOLL. Under the contract?

Mr. MARTIN. No; not growing out of this at all. We have $1,000,000 more or less of investment and expenses, but it is not our purpose to make any claims on that.

Mr. STOLL. Under these sections 19 and 22, is not some set-off contemplated there?

Mr. MARTIN. I do not know of any set-off we have.

Mr. JAMES. In response to a question by Mr. Crowther, you said there was no law at that time but you were told there was going to be legislation to take care of it.

Mr. MARTIN. That was the general feeling among the officials, that this question was to be taken care of in some way.

Mr. JAMES. Who told you there was going to be legislation to take care of that?

Mr. MARTIN. I can not say that there was any declaration. It naturally came up in discussion with Col. Joyes, because the very words of his letter, "if the law permits," would naturally provoke a discussion in regard to that particular matter.

Mr. JAMES. Did Col. Joyes ever intimate to you that there was going to be legislation along those lines?

Mr. MARTIN. He assumed there would be.

Mr. JAMES. Did he tell you that there would be?

Mr. MARTIN. That is my impression.

Mr. JAMES. Did Col. Williams tell you that also?

Mr. MARTIN. No; Col. Williams came into it after the legislation was passed. Capt. Noble was the first law officer of the Government to handle it, and he handled it until his death. He died after these acts were passed.

Mr. JAMES. You did not know anything about those acts?

Mr. MARTIN. No. Capt. Noble handed me a memorandum——

Mr. JAMES (interposing). When?

Mr. MARTIN. In August, 1918, which I think was taken from one of the official Government reviews in Washington, containing Gen. Goethals's order, which, as I understood, was founded on these acts. It does not refer to them in terms but was founded on these acts, and Capt. Noble and I discussed the effect of that order, and it was his view that it was made with reference to these two acts of Congress. That was in August, 1918. The bulletin issued by Gen. Goethals is in your record.

Mr. JAMES. This legislation was passed in May and July. Was that legislation along the same line that Col. Joyes spoke to you about?

Mr. MARTIN. I can not say that Col. Joyes spoke about any specific legislation.

Mr. JAMES. He told you there would be legislation to take care of you, to validate the contract?

Mr. MARTIN. No; to take care of the general program of the Government. It was not only in our case, but there were numerous concerns that were doing that kind of work. There were transmission lines, connections between different lines built in the State of Ohio, and there was an extension at Pittsburgh, another at Cleveland, and another at Cincinnati. There were any number of situations of that kind. So that, considering the circumstances, it was simply one of those natural assumptions that if the Government created property on land of others some way was bound to be worked out by which the Government would salvage that property. But as to the form which the legislation would take, we did not have any idea.

Mr. JAMES. I understood you to say the other day that you did not know who the authors of the bills passed in May and July were?

Mr. MARTIN. No; I did not know anything about it.

Mr. JAMES. You understood they were riders on appropriation bills?

Mr. MARTIN. I have understood that since.

Mr. JAMES. Do you know who the author of the amendments was; did you ever look it up?

Mr. MARTIN. No.

Mr. JAMES. Did Mr. Dent look it up for you?

Mr. MARTIN. No.

Mr. DENT. I can explain that, Mr. James, when I make my statement.

Mr. FIELDS. If I have understood you correctly, you entered into this contract, practically every phase of it, before this legislation was enacted?

Mr. MARTIN. Yes; through work orders and memoranda and letters; substantially the whole proposition was agreed upon.

Mr. FIELDS. In letters and work orders?

Mr. MARTIN. Yes.

Mr. FIELDS. And you discussed with Col. Joyes and among yourselves the desirability of legislation to legalize the several phases of this agreement?

Mr. MARTIN. I can not say that my discussion rose to the dignity of saying it was desirable to pass this legislation. When we undertook to find a source of power, there was not a thing; and Col. Joyes says in his memorandum, "if the law permits," he would agree, in behalf of the Government, to dispose of the property. So those words "if the law permits" were put in there. Nobody could say then—nobody could possibly say—what it would be.

Mr. FIELDS. The question has been asked why the contract was not signed until the 7th day of November, 1918. Is it not a fact that the signing of the contract was deferred in the hope that legislation would be enacted that would legalize every phase of the contract?

Mr. MARTIN. No; because you see we had agreed to buy, if the Government demanded of us to buy, at a fair price. I can not say that the question of the lack of legislation delayed the contract the slightest. I do not think it delayed it an hour.

Mr. FIELDS. You stated awhile ago that it really was not a contract prior to November 7, 1918, in that there had not been a complete meeting of minds between the agent of the Government and the representative of the Alabama Power Co. How long did it take the agent of the Government and the representative of the Alabama Power Co. to effect a meeting of minds when they met in New York on the 7th day of November, 1918?

Mr. MARTIN. I assume before that time all those points had been disposed of, Mr. Fields.

Mr. FIELDS. Is it not a fact that they were disposed of—that is, all but the signing of it—at the time they were entered into, from time to time, by either verbal or written agreements?

Mr. MARTIN. As the matter progressed we agreed from time to time upon perhaps all of the contract, of course.

Mr. FIELDS. All was done but the signing, which was, so far as the substance of the contract goes, but a matter of form?

Mr. MARTIN. As I have explained, Col. Williams redrafted this contract, and his last redraft came to me on the 1st of November, 1918.

Mr. QUIN. In response to a question this morning you said that the Alabama Traction, Light & Power Co. (Ltd.), holds all of the common stock of the Alabama Power Co.?

Mr. MARTIN. Yes.

Mr. QUIN. In response to my question the other day I understood you to say that the Alabama Traction, Light & Power Co. (Ltd.) owned 10 per cent of that stock?

Mr. MARTIN. You misunderstood me.

Mr. QUIN. And that 48 per cent of it is held in foreign countries. You stated that 10 per cent was held by the Canadian corporation and 48 per cent held in England, France, Belgium, and other countries.

Mr. MARTIN. You misunderstood me. The stockholdings of our company are represented in two classes, the common stock and the preferred stock.

Mr. QUIN. Was this preferred stock?

Mr. MARTIN. No: I will tell you what that was. We have some 15,000 or 20,000 shares of preferred stock outstanding of the Alabama Power Co., all of which is practically held in Alabama. That amounts to about $2,000,000. We have, in addition to that, common stock amounting to about $18,000,000, all of which is held by the Alabama Traction, Light & Power Co. (Ltd.). But now you must get at the stockholders of the Alabama Traction, Light & Power Co. (Ltd.) to see wherein the control and ownership lies. The stock of that company was originally held, the large majority of it, abroad, and since the war in Europe that stock has been sold and has come to this country in great volume, and the largest single holdings of that stock are in this country. For instance, in the State of Alabama, there is one single group of people who have the largest block of stock of any one. There is another group of people in this country who have a large group of holdings. It has been quite widely scattered and held since 1914. The very fact of that stock emanating from a company in Canada is not the only question you must look at, but where the stock is held.

Mr. QUIN. In an answer to one of my questions you said that 10 per cent was held by the Dominion of Canada corporation.

Mr. MARTIN. No; I said by stockholders living in Canada. There was something less than 10 per cent held by citizens living in Canada.

Mr. QUIN. And 48 per cent across the Atlantic, and that leaves 42 per cent in this country?

Mr. MARTIN. In this country.

Mr. QUIN. You stated that 63 per cent of the securities were held in this country and 37 per cent held abroad.

Mr. MARTIN. Of our total securities; that is about the story.

Mr. QUIN. What is correct? Is it correct to say that 58 per cent of the stock is held in Canada and abroad?

Mr. MARTIN. Something less than 58 per cent.

Mr. QUIN. That is preferred stock?

Mr. MARTIN. No; that is all common.

Mr. QUIN. You stated to Mr. Garrett that all of the common stock was held by this Dominion of Canada corporation.

Mr. MARTIN. But what I am speaking of is the stock of the Canadian company. This stock has been widely distributed in this country, and that is the question you must look to. Of course, that is not——

Mr. QUIN (interposing). What bank controls the output of the securities of your company? They have to be sold, and some bank sells them, I presume.

Mr. MARTIN. The firm of Harris, Forbes & Co., and the firm of Coffin & Burr, are the investment bankers' organization through which we operate.

Mr. QUIN. Where are they located?

Mr. MARTIN. One firm is located in New York and one is located in Boston. They have represented our company for many years in the sale of our securities, and represent our company to-day in the sale of our securities.

Mr. GARRETT. I did not quite get the identification of that memorandum of four and a half pages which you referred to. Who made that memorandum?

Mr. MARTIN. You mean the one of the 3d of December?

Mr. GARRETT. The one you referred to, including the paragraphs which you read.

Mr. MARTIN. That was written by Col. Joyes.

Mr. GARRETT. It did not bear his signature.

Mr. MARTIN. No; it has his initials.

Mr. GARRETT. How did that get to your company?

Mr. MARTIN. He handed it to us.

Mr. GARRETT. He handed it to you?

Mr. MARTIN. Yes.

Mr. GARRETT. It was delivered to you by Col. Joyes?

Mr. MARTIN. Yes.

Mr. GARRETT. Mr. Martin, what do you say to this proposition: I understand now that your agreement was reached by correspondence, before the work began, virtually?

Mr. MARTIN. Yes; I have read it to you here.

Mr. GARRETT. Then what do you say to this proposition, as a lawyer: Where the minds of the parties reach an understanding as to what shall be done in the future, what law governs that contract; the law in force at the time of the agreement of the parties or the law in force at the time of the execution of the contract at some later date?

Mr. MARTIN. I will answer you by saying that these orders that were issued to us, Mr. Garrett, each of them said this, "All these conditions to be embodied in a future contract," and also "suitable arrangements to be made as already tentatively agreed upon to cover the cost of actual cost plus," etc. There were conditions in each of these letters agreed upon, and some were not. These conditions to be embodied in a future contract, necessarily when the future contract was made the law then in effect controls the validity of the contract.

Mr. GARRETT. What kind of a contract do you call this; what name would you give it? Would you call it a continuing contract?

Mr. MARTIN. Growing out of these work orders?

Mr. GARRETT. Yes.

Mr. MARTIN. I can not say that I can call it a continuing contract, or designate it with any such characteristic as that. We merely received work orders and were told to proceed, and proceeded.

Mr. GARRETT. What I am trying to get at is the legal question involved. You are the counsel of the Alabama Power Co., and, of course, you know the law.

The presumption is that we all know it, but it is a very violent presumption sometimes.

Mr. MARTIN. Yes; I accept that, too.

Mr. GARRETT. I am trying to get at the legal phase of it. I understand a great deal of this work was done, but there is a question involved here in connection with a certain option that you are claiming as a matter of law under this contract. When did that take effect, at the time you made the contract, or at the time you executed the contract?

Mr. MARTIN. I will answer that this way. An agreement to make an agreement is the substance of these work orders, and we agreed with Col. Joyes and he agreed with us that we would both make a future contract. But an agreement to make an agreement is not a contract, in the technical, legal sense. An agreement to make an agreement is unenforcible, you will admit that.

Mr. GARRETT. But your agreement began on a memorandum and on correspondence.

Mr. MARTIN. We began work under a memorandum.

Mr. GARRETT. The question I want to know is: When did your rights begin, when you began to execute and perform under the contract by oral agreement and memoranda agreement, or did it begin several months later when it was formally executed?

Mr. MARTIN. When there was a formal execution of the contract, that was the fixing of the rights of the parties. That is my answer to your question.

Mr. GARRETT. There were no rights fixed prior to that time?

Mr. MARTIN. No.

Mr. GARRETT. There is one more question I want to ask you in reference to Dam No. 2, under section 124 of the National Defense Act. I notice that the President, on February 23, 1918, wrote a letter to the Secretary of War. Is that in the hearing?

Mr. MARTIN. I do not think we put it in the hearing, but the Secretary of War did.

Mr. GARRETT. The President said in that letter "I refer to Section 124 of the National Defense Act of June 3, 1916, authorizing the President to determine the best means and adopt the most advantageous projects for the production of nitrates, and appropriating the sum of $20,000,000 for that purpose. Of this appropriation, I am advised that there is an available unallotted balance of $13,785,000.

"The completion of dam and power house No. 2, at the Muscle Shoals on the Tennessee River, as designed and projected by your department, is, in my judgment, of vital importance in accomplishing the purpose of the law. I should be pleased, therefore, to have you allot to that work all of the aforesaid balance, after deducting the sum of $400,000, which I understand will be acquired for the purchase of land required in connection with another project."

What has that to do with your contract?

Mr. MARTIN. It has not anything to do with it.

Mr. GARRETT. I notice in Mr. Graham's report of his investigation in connection with the statement of Col. Joyes, on page 5, it says: "Under a project No. 12F in regard to land for the United States nitrate plant No. 2 at Muscle Shoals there was charged to the appropriations for this fund $350,000." That was under the national defense act, section 124?

Mr. MARTIN. I am not familiar with that. I am only familiar with what has been stated to the committee by Gen. Williams and Maj. Burns. The Secretary of War stated that none of that appropriation was used for nitrate plant No. 2.

Mr. MILLER. Mr. Martin, the capital stock of the Alabama Power Co. is how much?

Mr. MARTIN. It is something over $18,000,000 and about $2,000,000 of preferred stock; that is, outstanding, I mean.

Mr. MILLER. Your company is incorporated under the laws of the State of Alabama?

Mr. MARTIN. Yes.

Mr. MILLER. What do your articles of incorporation specify as to your capital stock?

Mr. MARTIN. Authorized?

Mr. MILLER. Yes.

Mr. MARTIN. $50,000,000.

Mr. MILLER. And out of that there has been issued about $18,000,000 in common stock?

Mr. MARTIN. Approximately $18,750,000 of common stock.

Mr. MILLER. How much preferred stock?

Mr. MARTIN. I think there are about 20,000 shares outstanding, about $2,000,000.

Mr. MILLER. Is the status of your preferred stock as distinguished from the status of your common stock controlled by any law of the State of Alabama or controlled by the by-laws of your company?

Mr. MARTIN. I suppose by both, by our charter and by the laws of Alabama.

Mr. MILLER. Is there any definition of the status of the preferred stock in the laws of the State of Alabama?

Mr. MARTIN. Yes; preferred stock has such status as the articles of incorporation of a company give to it.

Mr. MILLER. What do the articles of incorporation of your company give to the preferred stock?

Mr. MARTIN. It is a charge on the earnings of the company, of course; the net earnings of the company—those earnings as they are determined after paying the operating expenses and fixed charges.

Mr. MILLER. Is it voting stock?

Mr. MARTIN. Yes; it is voting stock.

Mr. MILLER. In the annual meetings of the directors?

Mr. MARTIN. Yes; it votes pari passu with the common stock.

Mr. MILLER. Did I understand you correctly when you said the entire common stock of the Alabama Power Co. is controlled by the Alabama Traction, Light & Power Co. (Ltd.)?

Mr. MARTIN. It is owned by that company and the common stock of that company, in equivalent amount, is held by the public.

Mr. MILLER. Then, so far as the policy of the Alabama Power Co. is concerned, it is controlled by the Alabama Traction, Light & Power Co. (Ltd.)?

Mr. MARTIN. By the stockholders of that company.

Mr. MILLER. And the majority of stockholders of that company are foreign stockholders?

Mr. MARTIN. There is more than 50 per cent of them, as I recollect, who live outside of the United States, but I might add that the only dividends of any sort or kind that have been paid on our securities have gone to American security holders.

Mr. MILLER. I am talking about the stock.

Mr. MARTIN. Our preferred stock is entirely held in this country.

Mr. MILLER. Mr. Martin, is any of the stock of the Alabama Power Co., outside of the 20,000 shares of preferred stock, held by individuals?

Mr. MARTIN. No. The stock of Alabama Traction Light & Power Co. (Ltd.), is held by individuals.

Mr. MILLER. Then there must be a pooling contract?

Mr. MARTIN. There are a great many individuals.

Mr. MILLER. Then there is a pooling contract, is there not?

Mr. MARTIN. There is one pooling arrangement, yes.

Mr. MILLER. There is a pooling arrangement by which all of these individuals——

Mr. MARTIN (interposing). Not all of them, just among a certain group of individuals.

Mr. MILLER. Just the minority of the holders of the common stock?

Mr. MARTIN. Yes; it represents a minority.

(Thereupon the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

The CHAIRMAN. Mr. Almon, I believe you desire to make a brief statement.

STATEMENT OF HON. EDWARD B. ALMON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA.

Mr. ALMON. Mr. Chairman, I want to make a very brief statement to correct what I think is an erroneous conclusion drawn by Mr. Martin when he stated that he did not understand that nitrate plant No. 2 and the Gorgas plant were authorized and constructed by virtue of section 124 of the national defense act. The national defense act, section 124, authorized the President to con-

struct one or more air nitrogen plants to be operated either with steam or hydroelectric power, one or both, for manufacture of munitions in time of war and fertilizer in time of peace.

I have been somewhat familiar with this subject and have given it some attention by virtue of the Muscle Shoals being in my district, but do not claim to have any better knowledge of it than others. The national defense act authorized the building of these plants. Plant No. 1, plant No. 2, and plants Nos. 3 and 4 which were stopped before they were completed in the State of Ohio, were, all four, in my opinion, authorized by the national defense act. The Wilson Dam is authorized by the national defense act. It was so understood by the President, it would seem, when he issued an order on the 23d day of February, 1918, which is very short, and I will read it:

"MY DEAR MR. SECRETARY: I refer to section 124 of the national defense act of June 3, 1916, authorizing the President to determine the best means and adopt the most advantageous projects for the production of nitrates and appropriating the sum of $20,000,000 for that purpose. Of this appropriation I am advised that there is an available, unallotted balance of $13,785,000. The completion of dam and power house No. 2—and that, of course, is a part of nitrate plant No. 2—at the Muscle Shoals, on the Tennessee River, as designed and projected by your department is, in my judgment, of vital importance in accomplishing the purpose of the law."

The CHAIRMAN. That letter was read in the hearings this morning.

Mr. ALMON. Now, I want to make one further statement, that the records, if not in evidence, can be put in evidence, to show that $350,000 of the $20,000,000 was expended on nitrate plant No. 2.

Mr. WRIGHT. $350,000,000.

Mr. ALMON. No; there was only $20,000,000 appropriated; $350,000, as the undisputed records show, was used out of that $20,000,000 in the construction of nitrate plant No. 2, all of which I think shows conclusively that Mr. Martin was in error when he formed the conclusion that nitrate plant No. 2 and the Gorgas plant were not constructed by virtue of the national defense act.

I would like also to call attention to this fact. I remember last February when we had up the question of an appropriation of $10,000,000 to complete the work on the dam, the question was first a mooted question as to whether it was subject to a point of order. After thorough investigation, Mr. Graham, who was very familiar with the subject, announced in the open House of Congress that the national defense act, section 124, authorized this $10,000,000 additional appropriation to complete the dam.

I just wanted to make those statements which, I think, on careful study by the committee, will cause them to come to the conclusion that nitrate plant No. 2 and everything connected with it, such as the Gorgas plant, the Steam plant, and the Wilson Dam, are all a part of the nitrates program provided for in the national defense act.

The CHAIRMAN. Mr. Dent, the committee will be pleased to hear you.

STATEMENT OF HON. S. HUBERT DENT, JR., ATTORNEY FOR THE ALABAMA POWER CO.

Mr. DENT. Mr. Chairman and gentlemen of the committee, I confess when I first appeared before this committee in the attitude of an attorney I felt a little queer in view of my long association around the table with the members of this committee. However, I am very glad, very much pleased, indeed, to renew my acquaintance with the members of this committee, with whom I have served so long and so cordially.

I wish to state, Mr. Chairman, at the outset that I appear before the committee simply and solely for the purpose of presenting the legal rights of my clients in the property involved in the Ford proposition. I am not concerned with any policy that the committee may see fit to adopt relative to the disposition of Muscle Shoals. That is a matter entirely for the good judgment of this committee, and, knowing the membership of this committee as I do, I am sure that this committee will give due and careful consideration to every proposition that is made, looking to the good of the Government and of the country in its final disposition of this matter.

So far as Muscle Shoals itself is concerned, many members of this committee know that during my service in Congress I was quite active in trying to have Muscle Shoals developed in some way. It was started when I was a Member, and the chairman was also a member, of the conference committee when the national defense act was passed in 1916. I fought for that proposition up to the time that my term of office expired as a member of Congress on the 4th day of last March.

The Ford proposition is a new proposition in connection with Muscle Shoals. It is a proposition that has arisen since I retired from Congress. It was never made during my term of office as a Member of Congress, and so far as the Gorgas plant is concerned, and that is the property in which I am interested as an attorney, I do not know that I ever heard of the Gorgas plant pending the various propositions that were made to develop Muscle Shoals during my term of service as a Member of Congress, and while we were trying to develop Muscle Shoals I do not recall that the Gorgas plant ever entered into any of our deliberations or was ever considered as a necessary adjunct to the development of the Muscle Shoals proposition. As a matter of fact I may have heard of the Gorgas plant, but it had no significance to me. I knew not where it was or how it was constructed, and when we were endeavoring in the last Congress to get the Government to continue its operations at Muscle Shoals I am sure that the Gorgas plant was never considered as necessary in order for the Government to develop that project. So that the Gorgas plant has been put into the Muscle Shoals project by Mr. Ford, and since the 4th day of last March.

Now, let it be remembered that the Gorgas plant is 88 miles south of Muscle Shoals; that it is situated out in the coal fields of Walker County; that the original plant was constructed by the Alabama Power Co. as a reserve plant in order to effectuate their hydroelectric system in the State of Alabama, to utilize it in case of low water.

According to the proof the Government itself came to the power company with the idea of utilizing this plant pending the construction of its Muscle Shoals project, after the Government had decided to undertake the manufacture of nitrates at that point.

Now, Mr. Chairman, the examination in this case has taken a wide range. A great many, it seems to me, immaterial questions have been asked of the president of this company in his testimony before the committee, undertaking to present his legal rights; and let it be remembered right here, too, that this is the first time that the company has had an opportunity to be heard at all. Notwithstanding the fact that everybody concedes that it owned the original plant at Gorgas; notwithstanding the fact that everybody concedes that it owns the land upon which the plant is located; notwithstanding the fact that everybody concedes that it owns the right of way over which the transmission line up to Sheffield runs, yet it never was consulted either by Mr. Ford or by the War Department as to its rights in the matter at all, and this is the first opportunity it has had to present those rights to anybody.

I take it for granted, Mr. Chairman, that it is an immaterial matter, whether it be true or not, that the people of Alabama are hostile to the Alabama Power Co. I take it to be immaterial whether a majority of the stock of the Alabama Power Co. is owned by people in England and other foreign countries or not. I take all of these things to be absolutely immaterial, if the Alabama Power Co., a corporation duly chartered under the laws of Alabama, has a valid contract with the Government of the United States.

Now, of course, everybody knows that there is some prejudice, some hostility against every public-service corporation in this country. It is sometimes a little difficult to understand, because I do not see how we can get along without them, myself; but still that hostility exists against every kind and character of public-service corporations; but I do know this, that the Alabama Power Co. is chartered under the laws of Alabama; that it is subject to the jurisdiction and control of the Public Service Commission of Alabama, and that commission has about as wide powers as any I know of in any State in the Union; and I know, furthermore, that Alabama is one of the richest States in the United States in water power, and during all of its existence as a State that water power had been going to waste until the Alabama Power Co. came to our assistance.

But that is neither here nor there. The fact is, the Alabama Power Co. has a contract with the Government of the United States, conceding now first the validity of the contract. It has a contract with the Government of the United States by which the Government of the United States was to furnish the money to increase the equipment at the Gorgas plant and at the end of a certain period, or at a particular time, we may say, the Government has the right to demand of the Alabama Power Co. that it purchase the property which was

placed upon its land and in connection with its original plant, and the Alabama Power Co., on the other hand, has the right to demand of the Government that it sell to it that power equipment.

Now, what are the objections to that contract? First, it is said that the contract was dated on December 1, 1917. Second, it is said that the contract is violative of the spirit and intention of section 124 of the national defense act. And third, it is said that it is a hard and unconscionable bargain.

Now, let us take those three objections up in the inverse order. First, that it is a hard and unconscionable bargain.

In the first place, let me call the attention of the lawyers on this committee to the fact that if this contract is unconscionable, if it is a hard bargain, it appears on the face of the instrument itself. It has not been developed by any outside, extraneous testimony. I repeat, it appears on the face of the instrument itself. Now, I know of no rule, even in a court of equity, which will relieve against a contract because one party gets an unfair advantage over the other if that advantage appears on the face of the contract itself and the contract was executed by parties competent to contract. If both parties had the mentality to make the contract, could read and understand the contract, no court on God's green earth would relieve against its terms because on the face of it it appears that one party got a little advantage of the other. One of the parties must be under a disability or there must have been some outside perpetrated fraud or advantage taken before a court of equity, even, would intervene to relieve against a contract of that kind; but let us see if the contract is unconscionable.

The main reason, as I gather it, from the various questions asked by the members of this committee, that it is a hard bargain and an unconscionable contract, is because the only party that can purchase the Government's interest in the contract is the Alabama Power Co. Now, is that unusual? I again ask the lawyers on this committee if the law books are not full of cases where the owner of land has entered into a contract with a third party to put improvements on his land and to use those improvements for a stipulated period of time, and at the end of that time the owner to pay for them at such a price as may be agreed upon between them, or if not at such price as may be fixed by arbitration. I do not know of anything that could be fairer than that. How else could you have made the contract.

The Government might have gone down there and put up a plant of its own, but I dare say it would have cost more than it will cost the Government under this plan, and let me remind this committee that the Government did go to Nashville and put up a powder plant, and the Government went over here to Nitro, Va., and put up plants, spending millions of dollars upon those two plants with the result that when the Government did it itself, both of them were sold for scrap and the Government only got a few thousand dollars out of it, whereas under this contract the Government has the right to obtain the fair value for the property that is put upon the land of the Alabama Power Co., and if the parties themselves can not agree upon the terms, then arbitrators fix the value, and arbitrators, Mr. Chairman, are not bound by the strict rules of law in fixing the price of property.

I dare say they would take into consideration the original amount that the Government put into the plant; I dare say they would consider how much it would cost to reproduce it at this time, if they were entering into the arbitration now; and I dare say they would consider the earning capacity of the plant as it is, and, of course, take into consideration the wear and tear and the use of the property for the time that it has been used. All of those things being taken into consideration, the arbitrators could reach a fair conclusion as to what the Alabama Power Co. would have to pay for this property, and under the contract they would have to pay that price, and I venture the assertion that this is one of the fairest contracts that was made during the war, in the stress of war, of that class.

Now, it was not unusual for the Government to make contracts of this kind; in fact, the Government made contracts of this kind all over this country from the beginning of the war almost up to the end, and if you will search the records of the various departments of the Government, you will find that this character of contract was made by the different branches of the Government in various parts of the United States during the war, and the only difference that I have found is that in most of the contracts, the Government, if the contractor did not pay the price that the Government thought its property was worth, could remove the property from the premises at its own expense, whereas under this contract the Government can either remove it if it wants

to or it can make the Alabama Power Co. pay what arbitrators say is the fair value of the property.

Now, just let me call attention right in that connection to the hearings before the Naval Affairs Committee of the United States Senate, Sixty-fifth Congress, third session, pursuant to Senate resolution 404, the resolution directing the Committee on Naval Affairs to investigate the so-called motor boats and the contracts therefor made with the Ford Motor Co. for the construction of said boats.

Admiral Taylor testified before the committee. I just want to read a few extracts to show that they made this sort of contract with Mr. Ford and they made them with various other people during the war, and put money on property belonging to somebody else, with the understanding they could move it off or get paid for it. That is all there is to it. Senator Walsh said:

"In one of Senator Poindexter's questions he referred to the fact that you had spent $3,500,000 on property which belonged to the Ford Co. I understood you to say you had spent $35,000,000 on property owned by others on improvements on that (their) property."

The CHAIRMAN. What page is that?

Mr. DENT. Page 50.

"Admiral TAYLOR. On one enterprise, in connection with the 150 destroyers, and a part of that is on property which we own. A part of it is upon property belonging to the city of Providence and the rest upon property of various shipyards. Those contracts were made before this contract, and this contract follows substantially the form of the other contracts.

"Senator WALSH. Can you designate some of the companies with which you made such arrangements?

"Admiral TAYLOR. Yes. The Bethlehem Co., both for the Fore River Shipyard and the Union Iron Works; the New York Shipbuilding Co., Cramps, and Newport News. If I am not mistaken, that advance for the increased plant at the yard of the New York Shipbuilding Co. was $3,500,000, in connection with the destroyers.

"Senator POINDEXTER. On land that the Government did not own?

"Admiral TAYLOR. On land that the Government did not own. That was fully understood and explained at the time we got the authorization; it was fully explained to the Committee on Appropriations of the House and they were told what we expected to do, and they gave us the money and they gave us the strongest powers that have ever been put into a bill.

"Senator PITTMAN. You say there was $3,500,000 advanced to the New York Shipbuilding Co. We built a plant which cost that amount?

"Admiral TAYLOR. We have advanced them working capital to the amount of about $5,000,000.

"Senator PITTMAN. You gave to the Fore River Co. $25,000,000."

Again, my attention is called to page 38 of the same hearings.

The CHAIRMAN. Have you identified the hearing for the record?

Mr. DENT. Yes, sir. On page 38, Senator Lodge, quizzing Admiral Taylor:

"Senator LODGE. That leads me to ask another question. What becomes of the plant which the Government built on the River Rouge?

"Admiral TAYLOR. The contract provides for the handling of that plant the same as the other plants which we have provided. That contract is substantially the same in that regard as the contract made for the destroyers, with the exception that it is slightly more favorable. The contract provides that at the end of the contract there shall be an appraisal made of that plant by the compensation board, which handles the financial matters, and if the contractor is satisfied with our appraisal he may pay the price for the plant. If he does not accept, we will have the right to remove the portable plant. In the case of the other plant, we have the right to wreck the buildings for their scrap value. Those are the standard provisions in these contracts."

Now, I think, Mr. Chairman, that the Alabama Power Co., when that was the habit of the Government, not only in the War Department but in the Navy Department and in the other branches of the Government, should not be singled out as having made an unconscionable bargain with the Government, especially when their contract was a little different from the others and provides for a repayment to the Government of the property that they invest in their plant at fair value, to be fixed by three arbitrators, one selected by the Government, the other by the power company, and the two selecting a third.

Now, the other objections to the contract are the date and the fact it is contrary to section 124 of the national defense act.

I take it, it will not be disputed by any lawyer on the committee that one of the well-established exceptions to the rule that parole evidence can not be introduced to vary a written instrument is that you can always prove the true date of the instrument. That rule is laid down in all the lawbooks without any single, solitary exception, and the undisputed proof in this case shows that this contract was not actually executed until November, 1918, some months after the passage of the act of July 9, 1918, authorizing the heads of the various departments to sell property of the Government that was acquired during the war, just as this was.

Now, before I go any further into that, the question has been raised as to whether or not the Alabama Power Co. had anything to do with the passage of that law. I would like to make a brief statement in regard to that, because that question has been raised by some questions by different members of the committee.

That provision of law is a rider on the Army appropriation bill of July 9, 1918. It is very comprehensive. I have before me that Army appropriation act on page 497 of this volume, which the committee has, of "Legislation of the war Congress relative to the Army," which was compiled shortly after the war and given to each member of our committee at the time. Of course, the act can be found elsewhere. On page 6 of the act, page 502 of this volume, there is a provision headed, "Sale of war supplies."

The CHAIRMAN. Was that provision put in by the Senate?

Mr. DENT. No, sir; I do not think that was put in by the Senate. I was going to explain that to you, and I think you will recall, Mr. Chairman, when I make the explanation, how this all occurred. I thought I would read it to the committee, as it is very brief, to show how comprehensive it is.

The CHAIRMAN. Proceed.

Mr. DENT. "That the President be, and he hereby is, authorized, through the head of any executive department, to sell, upon such terms as the head of such department shall deem expedient, to any person, partnership, association, corporation, or any other department of the Government, or to any foreign State or Government engaged in war against any Government with which the United States is at war, any war supplies, material, and equipment, and any by-product thereof, and any building, plant, or factory acquired since April 6, 1917, including the lands upon which the plant or factory may be situated, for the production of such war supplies, materials, and equipment which, during the present emergency, may have or may hereafter be purchased, acquired, or manufactured by the United States. * * *"

Now, I want to refresh the memory of several members of the committee and particularly the chairman. I think you, Mr. Chairman, will recall it by reason of the fact that you and I served on the conference committee that finally worked out this bill.

The CHAIRMAN. It went to conference?

Mr. DENT. Yes, sir.

The CHAIRMAN. Then it must have been put in in conference, or the Senate may have offered it as an amendment.

Mr. DENT. It occurred in this way, as I recall it, Mr. Chairman: The Secretary of War sent to me at that particular time, and for some months beforehand, a large batch of bills that were called War Department measures, that the War Department wanted to get through Congress, and this bill was among the number. The Military Affairs Committee met and favorably reported practically all of these War Department measures, measures that the Secretary of War had sent down to me as chairman to present to the committee and had asked for their passage. Practically all of these bills were favorably reported and put on the calendar, but the calendar was so crowded we could not get any day to consider these particular bills, so we decided to tack them on to the Army appropriation bill and run the gantlet of a point of order. I am not sure whether there was a point of order made against this on the floor of the House or not; I think not. My recollection is that this was incorporated in the House appropriation bill itself and went through, but if not I am sure that it was put on in the Senate at the request of the Secretary of War and as a part of the legislative program that he needed during the war to carry out war purposes and contracts that had already been made. I would like to send this act up to you to look at. You will find that this appropriation bill of July 9, 1918, is loaded down with legislative riders, all due to the fact that

we were trying to put through the legislation that the War Department considered as absolutely essential in order to carry on its program. Beginning on page 36 of the bill and page 532 of this volume, on down to the end of the bill, page 58 of the bill, and page 554 of this volume, are the riders. There are 22 pages of riders attached to the appropriation bill, and this is one of them. I simply show you that, Mr. Chairman, in order to explain how that got into the Army appropriation bill. It was a request of the Secretary of War and was one of his schemes of legislation.

Now, Mr. Chairman, coming down to the proposition as to whether or not this contract is violative of section 124 of the national defense act, in the first place there may arise some question, if the contract between the Government and the Alabama Power Co. violates the spirit, the purpose, and the intent of section 124, whether or not the Government itself can claim any right in the premises, and whether or not both parties are not in pari delicto, and the law would leave them where they stood. Judge Parker, of New Jersey, who is a member of the committee, directed attention to that point, when Col. Hull was on the stand testifying as to this contract. However, I simply mention that because it is not the disposition of our people to take any such technical advantage. We are standing on what we believe to be substantial rights, but our contention is that this section absolutely has no application to this contract for two reasons: First, because this section limited the appropriation to $20,000,000, and under the order that Judge Almon read here to-day, which is the same that Mr. Martin read to the committee on Friday, it was provided that the unexpended balance of that money should be used for the construction of the dam, so that there was nothing left by way of appropriations to carry on any other feature of section 124.

Now, section 124 gives the President several powers.

In the first place, the President is authorized and empowered to make or cause to be made an investigation as to the cheapest, best, and most available means for the production of nitrate and other munitions of war; second, he is also authorized and empowered to designate for the exclusive use of the United States, if in his judgment such means is best and cheapest, such site or sites upon any navigable or nonnavigable river or rivers or upon the public lands, as in his opinion will be necessary for carrying out the purposes of this act; and, third, he is authorized to construct, maintain, and operate, at or on any site or sites so designated, dams, locks, improvements to navigation, power houses, and other plants, etc.

So that the President under this order simply selected and designated the site and expended every dollar of unexpended balance of that $20,000,000 in the selection and improvement of the site. There was no money left with which to build any nitrate plants under that section of the law, and we have got to look somewhere else for that purpose.

I remember distinctly, as I recall it, asking Secretary Baker on one occasion myself where they got authority to spend the $85,000,000 that was spent down there at Muscle Shoals, and he answered that it was under the ordnance and fortification act passed during the war that this money was expended; but another and a conclusive reason why this contract is not governed by section 124 or that portion of it which reads that "the plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital," is that this contract is not either for the construction or operation jointly by the Alabama Power Co. and the Government of the nitrate plant. The contract, at most, between the Government of the United States and the Alabama Power Co., in so far as it relates to Muscle Shoals, is nothing more nor less than the purchase of energy by the Government of the United States from the Alabama Power Co. for the purpose of supplying them with light and power while they are constructing the work there at Muscle Shoals.

Why, confessedly, the Alabama Power Co. has never had a word to say or a thing on earth to do with the construction of those plants at Muscle Shoals, and the mere purchase of energy under this contract, the mere purchase of the right to acquire power from a plant 88 miles away so that they might have light and power while they were constructing the plant can not in any form be said to be a joint contract for the construction of the nitrate plant. It is straining language, Mr. Chairman, to contend otherwise.

In addition to that, the officers of the Ordnance Department who entered into this contract for and on behalf of the Government testify distinctly that such is not the case; that section 124 was not looked to for the purpose of making

this contract at all. For instance, during Maj. Gen. Williams's testimony before this committee, part 2, page 78, Mr. Miller read to Gen. Williams that portion of the act of June 3, 1916, which authorizes the President to erect nitrate plants, and Gen. Williams, in answer to the question propounded by Judge Miller, after reading that portion of the section, said:

"Gen. WILLIAMS. Not a cent of money carried in that act was used in this enterprise. It was paid for out of the appropriation for armament and fortifications."

Then Mr. Miller said:

"Mr. MILLER. Then it was not provided for under this act?

"Gen. WILLIAMS. No."

Now, that is the construction, Mr. Chairman and gentlemen of the committee, placed upon the contract by the officers of the War Department themselves who were representing the Government in this transaction.

At this point let me call attention to the fact that we are dealing with a peculiar proposition by which it is attempted to make a contract on the part of one party with another for the disposition of the property rights of a third party. All we are asking is that the property rights of the third party should be given fair and just and due consideration. We claim that in order for the Government to carry out that portion of the contract, if the Government should enter into a contract with Mr. Ford in accordance with his proposition, the Government must condemn our contractual rights with it, as well as the land and the plant which confessedly we own in fee simple. In order to do that the Government must surrender about $5,000,000 that it has put into that plant, and in addition to that the Government would be required to pay us whatever the courts would say our property rights were in the premises down there, amounting at least to some three or four million dollars. In other words, if the Gorgas plant is to be left in Mr. Ford's proposition, the Government is giving to Mr. Ford nine or ten million dollars, free gratis, for absolutely nothing, consisting of the $5,000,000 that they have already expended and the something like $4,000,000 that we have put into this property.

The Government is to get only $5,000,000 from Mr. Ford for the two big plants at Muscle Shoals, so that in the end the Government will not only not get a nickel for its plants at Muscle Shoals but will actually have to go down in its pockets in order to carry out this agreement in accordance with Mr. Ford's proposition, and why? Is it necessary to the Muscle Shoals project? Is it any part of it? Is it not 88 miles away from there? Was it ever considered as a part of the Muscle Shoals project when we undertook to get the Government to continue its operations? Nobody ever heard of it before, and I say talk about unconscionable bargains, talk about hard bargains, gentlemen of the committee, here is a man that proposes to make the Government go down in its pockets and not only give up the $5,000,000 that it has already expended upon this plant but to go down in its pockets and condemn the private property of another corporation at an expense of at least three or four million dollars in order to enable Mr. Ford to carry out his Muscle Shoals project, when it is 88 miles away from there.

That is not all, Mr. Chairman. It is not so perfectly clear—I am not so cocksure, as my good friend, Brother Quin, is—that the Government has any right to condemn our plant, which is used in connection with another purpose, and which is situated 88 miles away from there. The right to condemn is a powerful right. It is a very extensive right on the part of the Government of the United States, but that right to condemn is limited to property that is necessary and essential in order to carry out the fundamental Government purpose; and if it can be shown that this plant is not necessary in order to effectuate the public purpose of developing Muscle Shoals so that we can make nitrogen from the air, then I question whether any court in this land will take our property away from us and give it to Mr. Ford under a condemnation proceeding. At any rate, if you make this contract, nobody could blame the Alabama Power Co., as the owner of this property, from asserting its rights in the courts, and acceptance of the conrtact in its present form would mean a lawsuit.

Now, Mr. Chairman, I do not intend to weary the committee any more than I can possibly help, but I want to discuss just one other feature of this proposition, and then I am going to quit.

The CHAIRMAN. I want to say, Mr. Dent, that you are not wearying the committee, but the committee is deeply interested in what you are saying.

Mr. DENT. Thank you very much, Mr. Chairman.

Suppose there was a technical advantage, a purely legal technical advantage, that the Government has, and which it could use, in order to take advantage of the Alabama Power Co. and refuse to carry out the terms of the contract. Let us come right down to that point. I do not think so, because I think we have established clearly a legal right in the premises here which I think any court of the land will uphold, but let us go further and let us suppose, just for a moment, that the Government could, by some technical, legal question, take advantage of the Alabama Power Co. and refuse to carry out this contract.

Secretary Weeks stated very frankly before the committee that he was surprised at the opinion of the Judge Advocate General stating that this contract was void; but even if it were void, he did not believe that a great Government like this ought to take advantage of a technicality and refuse to carry out its obligations, and thereby set such an example to the entire American people.

The Congress of the United States, so far as I know, representing the American people, has never been guilty of anything of that kind. On the contrary, the Congress of the United States has always exhibited just the opposite spirit. That was well illustrated by the passage of what somebody has seen fit to denominate as the Dent Act of March 2, 1919. I do not know who named it the Dent Act, because we all worried over that act together for a long time, and we had a great deal of trouble with it. You will remember the comptroller brought us down a bill which we did not like, and we all set to work and wrote one ourselves, and finally worked it out among ourselves, but at any rate that act, according to the testimony before us, as I recall, at that time was said to have involved at least something like $1,600,000,000 worth of contracts—contracts that had been entered into over the telephone, contracts that had been entered into by telegram, contracts that had been entered into by mere verbal conversation between the contracting officers and the contractors. Under the ruling of the comptroller, it was held that not a single, solitary one of those contracts could be enforced, because the statute required that all Government contracts should be signed by the contracting officer and attached to the contract should be an affidavit to the effect, as I recall the substance of it, that the contract was to the advantage of the Government and that he, the officer, had no personal interest whatever in it. The comptroller ruled that unless all three of those conditions were complied with—that the contract was in writing, that it was signed by the contracting officer, and this affidavit attached by the contracting officer—that the contract was not enforceable.

What did Congress do in that situation? We passed the so-called Dent Act correcting, or rather validating, so to speak, every bona fide contract that was entered into on the part of the Government, on the one hand, and the contractor, on the other, regardless of its form, regardless of whether it was signed by the contracting officer or not, regardless of whether the affidavit was made or not; and there was not a dissenting voice, as I recall it, on the floor of the House against the passage of this legislation. We did have some controversy over the form that it should take. Some of the Members wanted a commission to pass on the contracts, whereas the bill itself authorized it to be done under the direction of the Secretary of War, as reported by the committee, and it finally passed in the form the committee reported it. But there was not a dissenting voice, as I recall it, on the floor of the House or of the Senate against the passage of this legislation. Why? Because this Government was too big to take advantage of any technicality; and if the contract had been entered into in good faith and it had been performed on the part of the contracting party, then Congress held that that contract should be fulfilled.

Now, I want to call attention briefly in that connection to the language of this statute. As I construe this statute, it is permanent law. It is the law of today. The time provision in it is a proviso to the effect that this act shall not authorize payment to be made of any claim not presented before June 30, 1919; but that only applies to cases where the other party to the contract has a money demand against the Government. The Alabama Power Co. has no money demand against the Government in this case, but is simply asking that its contract be fulfilled. If there is any money demand at all, it is due from us to the Government.

Now, that statute reads as follows:

"That the Secretary of War be, and he hereby is, authorized to adjust, pay, or discharge any agreement, express or implied, upon a fair and equitable basis that has been entered into, in good faith, during the present emergency

and prior to November 12, 1918, by any officer or agent acting under his authority, direction, or instruction, or that of the President, with any person, firm, or corporation for the acquisition of lands or the use thereof, or for damages resulting from notice by the Government of its intention to acquire or use said lands or for the production, manufacture, sale, acquisition, or control of equipment, materials, or supplies, or for services, or facilities, or other purposes connected with the prosecution of the war, when such agreement has been performed in whole or in part, or expenditures have been made or obligations incurred upon the faith of the same by any such person, firm, or corporation prior to November 12, 1918, and such agreement has not been executed in the manner prescribed by law."

Now, I say that that statute recently passed by Congress is an expression of the congressional will that the Government of the United States, even if it had the opportunity to take advantage of the Alabama Power Co. in this case, because of the fact that perhaps the contract may be in violation of section 124 of the national defense act, that under no circumstances ought the Government, in this instance, to set such an example to the American people.

Mr. Chairman, in simple form, that presents our case. Your attention has been called to the fact that we also own the abutting property at dam site No. 3 on the Tennessee River, which is involved in Mr. Ford's proposition. Of course, we concede that if the Ford proposition should be accepted by the Government, unquestionably, Congress could authorize that property to be condemned, because that is directly in connection with the navigation of the Tennessee River. There is no question about that, but the other proposition we do not by any means concede.

Our contention therefore is that this contract is really fairer than most of the contracts that were made during this time; that it is in line with the policy adopted by the Government during the war in making such contracts; that it is in accordance with the general law on the subject, that the owner of land has a right to make a contract with a third party to put improvements on it, he, the owner, to purchase the improvements at the end of a certain period, either by agreement or by arbitration; that the date of the contract shows that it was executed after Congress had authorized such a contract to be executed, and I may say in this connection that the right to make a sale of property unquestionably carries with it an incidental right to make a contract for the sale of the property; and that it is not in violation of section 124 because the presidential order and the testimony of the Ordnance Department all shows that this contract was made under the authorizations for armament of fortifications; and, furthermore, that it is not a joint undertaking on the part of the Alabama Power Co. and nobody can contend that it is a joint undertaking to build and construct those nitrate plants and make fertilizer up there at Muscle Shoals on the part of the Alabama Power Co. and the Government simply because the Alabama Power Co. transmits, for a distance of 88 miles, a little power in order to light the grounds; and, lastly, Mr. Chairman, we contend that even if you have the right to take a technical advantage of the Alabama Power Co., the Government of the United States is too big and Congress is too honest to justify any such legislation.

The CHAIRMAN. Mr. Dent, the attention of the committee has been called to two laws that were passed in 1918, one of which you have already explained.

Mr. DENT. Yes.

The CHAIRMAN. Did the first law, which I think was dated in May, 1918, have anything to do with the Alabama Power Co.?

Mr. DENT. Mr. Chairman, I have heard a good deal of reference to that law. I am not familiar with it. I am not basing anything on that, and I confess I am not familiar with it. I am basing our rights upon two acts, and I have called your attention to two riders in that Army appropriation bill. You will find in the appropriation act of July 9, 1918, in addition to that power to sell Government property acquired since the beginning of the war, that there was also a provision authorizing the Ordnance Department, in addition to the powers it now has, to purchase ordnance and ordnance supplies and materials to the extent of not exceeding $500,000,000, so that they would have been authorized under that clause of the Army appropriation act of July 9, 1918.

I believe there was one other proposition I wanted to bring to your attention, but to me it is so simple that I overlooked it.

The CHAIRMAN. Our attention has been called to the act of May 10.

Mr. DENT. Mr. Oliver has just handed that to me. I will read it if the Chairman wishes. On May 10, 1918, an act was approved providing, as follows:

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That during the existing emergency the President be, and he hereby is, authorized in his discretion and upon such terms as he shall deem expedient, through the head of any executive department, to sell any supplies, materials, equipment, or othr property heretofore or hereafter purchased, acquired, or manufactured by the United States in connection with or incidental to the prosecution of the war, to any person, partnership, association, or corporation or to any foreign State or Government engaged in war against any Government with which the United States is at war, and any moneys received by the United States as the proceeds of such sale shall be covered into the Treasury."

That is not quite as comprehensive as the act of July 9, 1918, but is along the same lines. Do you know why that act was passed, Mr. Oliver?

Mr. OLIVER. I do not. It was put in by Mr. Martin.

The CHAIRMAN. Do you contend that under the provisions of that law the Alabama Power Co. was affected?

Mr. DENT. Yes, sir; I do. I think it is broad enough to cover that, although I think the act of July 9——

The CHAIRMAN. Will you kindly state wherein you think it is broad enough.

Mr. DENT. "During the existing emergency, the President is authorized through the head of any executive department to sell any supplies, materials, equipment or other property heretofore or hereafter purchased, acquired, or manufactued by the United States in connection with or incidental to the prosecution of the war."

Any property that has been acquired or that may hereafter be acquired and that was used in connection with the prosecution of the war, I think that is certainly broad enough to cover it. I presume we followed that in the act of July 9, in order to make it a little more comprehensive.

There is one point I believe I did overlook that was suggested by a question propounded by one member of the committee, and that is, If the minds of these parties came together in December, 1917, upon the terms of the contract, whether or not the law then in existence would not govern rather than the law in existence at the time of the actual execution of the written instrument. I need only call the attention of the committee to the well-established rule that where parties enter into negotiations and they are pending for a long time, with verbal negotiations and written memoranda, etc., that all previous negotiations are merged finally into the execution of the written instrument. I do not think there will be any dispute about that proposition.

I believe that is all I have to submit, unless there are some questions.

Mr. OLIVER. Mr. Chairman, I would like to make a statement, purely a legal statement.

The CHAIRMAN. After we finish with witness, if you please, Mr. Dent, probably some of the members of the committee would like to ask you some questions.

Mr. DENT. I will be very glad to answer them if I can.

Mr. MCKENZIE. There is only one question I desire to ask my old colleague, and that is in connection with the so-called Dent Act and the struggle which he has referred to that took place in our committee in an endeavor to rewrite that law as it now stands. I want to ask you if it is not a fact that when the first bill was submitted to the Committee on Military Affairs, it practically gave immunity to all army officers for violation of the then existing law of the land in connection with contracts entered into by representatives of the War Repartment with civilians?

Mr. DENT. That is my distinct recollection.

Mr. MCKENZIE. And is it not a fact that the Committee on Military Affairs reasserted in this law and put in a provision reasserting the law and holding those officers responsible, regardless of anything that might have transpired during the war?

Mr. DENT. That is very true, and if my recollection serves me right, you are the author of that amendment.

Mr. MCKENZIE. I do not know about that.

Mr. DENT. Yes, sir; I think you were the author of that amendment.

Mr. MCKENZIE. At least I was one of the members of the committee who insisted that the rights of the Government should at least be safeguarded to that extent.

Mr. DENT. I think you suggested the amendment. That is my recollection.

Mr. MILLER. Mr. Dent, as I remember it, there arose down in your section

a case on this very point—on the right of the Government to condemn—which is a point that you have raised here, as to whether, under the conditions, the United States Government would have the right to condemn.

Mr. DENT. I suggested that point, Mr. Miller.

Mr. MILLER. A case arose down in your State at Montgomery, was it not, that got into the Federal courts?

Mr. DENT. Yes, sir; the Forbes case, you are talking about.

Mr. MILLER. Yes; in 259 Federal.

Mr. DENT. Yes, sir; that grew out of the building of Camp Sheridan, which was an Army camp established by the War Department in Montgomery.

Mr. MILLER. If I remember correctly, the Government was starting in to condemn some property of a man by the name of Forbes.

Mr. DENT. Yes, sir; that is correct.

Mr. MILLER. The Government had made some arrangements by which, after these condemnation proceedings, the property should go to the city of Montgomery, or something of that sort.

Mr. DENT. Yes, sir.

Mr. MILLER. And the Federal court held that the interest of Mr. Forbes in what the Government should subsequently do with that property was no more than the interest of any other citizen of the United States.

Mr. DENT. Yes, sir.

Mr. MILLER. Now, in the absence of any intervening legislation, would not that same principle of law apply to the property of the Alabama Power Co.?

Mr. DENT. I do not think so, Judge Miller. In that case Mr. Forbes owned land that was contiguous or was a part of the property upon which the military authorities had selected a camp for the training of a division of troops, and they could not agree with Mr. Forbes, and the Government filed condemnation proceedings against him to condemn those lands, and incidentally the question arose—I have not read the case recently—incidentally the question arose as to whether or not the Government, as I understand it, having decided to deed this property to the city of Montgomery after the war could offset the proceedings—you see this condemnation proceeding was not finished until after the war was over. It was begun during the war, but the proceedings were not terminated until after the war, and Judge Clayton, who was the judge that presided in that case, a former Member of Congress and a former chairman of the Judiciary Committee of the House, held it was immaterial to Mr. Forbes what the Government was going to do with it after they condemned it, but they had a right to condemn at the time they instituted the proceedings for the purpose of establishing a military camp to train a division of troops, and they actually did establish it.

Mr. MILLER. You claim that the facts under which that condemnation case was carried on in the court are to be distinguished from the one in question here.

Mr. DENT. Absolutely, because here I contend that this reserve steam plant of the Alabama Power Co., situated out in the coal fields of Walker County, 88 miles from there, can not of necessity be essential to the development of the Muscle Shoals project.

Mr. MILLER. That it is not a part and parcel of it.

Mr. DENT. Yes, sir.

Mr. CROWTHER. Mr. Dent, I have twice asked this question of two different witnesses as to whether or not there was any advantage in waiting until a later date in signing this agreement; that is, any advantage in waiting for legislation to occur during the interim. I did that not in a spirit of criticism, but merely for information, because from the information I gleaned from my many legal friends, from whom I must get such information, being just a layman myself, they all differed as to when this agreement was valid, whether on the date of December 1, 1917, or the date when it was signed.

Mr. DENT. Yes.

Mr. CROWTHER. That was why I asked that question; that is all.

Mr. WURZBACH. Mr. Dent, what do you understand by the words, "the head of any executive department." What kind of officers do you understand that to include?

Mr. DENT. The chiefs of bureaus, Mr. Wurzbach. For instance, in this case, Gen. Williams, the Chief of Ordnance.

Mr. WURZBACH. Gen. Williams?

Mr. DENT. Yes, sir.

Mr. WURZBACH. Did Gen. Williams sign this contract?

Mr. DENT. No, sir; but he authorized the man who did sign it to sign it for him. It says, "through the heads of the executive departments."

Mr. WURZBACH. Now, do you not think that the wording of these statutes means that the contract of sale must be entered into by one of the heads of departments, personally, or by a special delegation of power from the head of the department to do that particular act?

Mr. DENT. No. I do not, Mr. Wurzbach. I think when it says through the head of the department, they intentionally use that language because it was a physical impossibility for the head of the department, during the war, to sign all of the war contracts that they made.

Mr. WURZBACH. You think that any Army officer——

Mr. DENT (interposing). Designated by the head of a bureau.

Mr. WURZBACH (continuing). Could, under the terms of these acts, bind the Government without showing any special authority to do the particular acts done by the officer.

Mr. DENT. The special authority is shown by the order of the head of the department, Gen. Williams authorized this particular individual to sign the contracts for and in the name of and on behalf of the Government.

Mr. WURZBACH. What evidence of that authority have you?

Mr. DENT. In writing. It is in the record.

Mr. WURZBACH. I mean authority to sign this contract. The contract was executed and delivered in November.

Mr. DENT. Yes, sir. My attention is called to the fact that the contract itself recites that this particular officer was authorized by Gen. Williams, the head of the Ordnance Department, to sign the contract, for and in the name and on behalf of the Government. If that were not so, I still contend that the Dent Act would protect this contract because of its informal execution.

Mr. WURZBACH. I had reference to the acts of May and July 1918.

Mr. DENT. I understood that. In the body of the contract there is this recital: "This agreement, dated December 1, 1917, between Alabama Power Co (Inc.), a corporation organized and existing under the laws of the State of Alabama (hereinafter called the "contractor"), party of the first part, and the United States of America, by William Williams, lieutenant colonel, Ordnance Department, the United States Army, acting as contracting officer by authority of the Chief of Ordnance of the United States Army."

Mr. WURZBACH. You do not think that recital would be conclusive, do you?

Mr. DENT. No. I do not think it would be conclusive, but Gen. Williams has testified that he authorized the contract and approved it.

Mr. WURZBACH. He did testify to that?

Mr. DENT. I so understand.

Mr. WURZBACH. I do not remember that testimony.

Mr. DENT. The effect of the testimony is that, and I am sure he will testify to that effect, because his testimony says he approved this contract, and he says it ought to be carried out, as does also Maj. Burns of the same department.

Mr. WURZBACH. Your understanding is that it must be authorized by the head of the department.

Mr. DENT. Yes. And if I were trying this case in court I would have Gen. Williams as a witness to prove the authority for it, if I was called upon to make technical proof that I would have to make in a court of justice.

The CHAIRMAN. I think Gen. Williams did state that at least in his opinion the Alabama Power Co. had a moral obligation against the Government, or that the Government had a moral obligation toward the Alabama Power Co.

Mr. DENT. Which is the same thing as approving the contract?

The CHAIRMAN. As I remember it, that is the express language he used.

Mr. WURZBACH. That was his conclusion, but I did not hear him testify that he authorized the execution of this particular contract.

Mr. DENT. He may not have said that in so many words, but if the committee wants to go into that technical proof, I am prepared to prove that. I can state of my own personal knowledge that I can prove it by Gen. Williams, because I have talked with him about this contract myself.

The CHAIRMAN. It is my impression that he stated before the committee that he authorized some of these things to be done.

Mr. WURZBACH. I do not dispute that. The question I was putting was whether or not he authorized the execution of this contract.

The CHAIRMAN. I think that was his testimony.

Mr. DENT. In connection with the contract itself there is at the end of the contract, after Col. William's signature, this memorandum:

"From: The Chief of Ordnance, United States Army, November 12, 1918, to Col. J. W. Joyes, Ordnance Department, United States Army.

"1. In accordance with the terms of the above-mentioned contract, dated the 1st day of December, 1917, between the Alabama Power Co. and the United States of America, by Lieut. Col. William Williams, Ordnance Department, United States Army, therein designated the contracting officer, you, as Chief of Nitrates Division, Ordnance Department, and in the event of your release from that position, your successor therein, are hereby designated to act as contracting officers thereunder in all respects and for all purposes contemplated by that contract." That is signed by C. C. Williams, Major General, Chief of Ordnance, United States Army.

Mr. CRAGO. As I understand, Mr. Dent's argument, it is not so much an argument as to the benefits to the Government growing out of any contract they had with the Alabama Power Co. on any one thing, except as they endeavor to show us why the offer from Mr. Ford should not be accepted and why the Government is not in a position to accept that offer.

Mr. DENT. As it stands now.

Mr. CRAGO. At the present time.

Mr. DENT. That is correct.

Mr. CRAGO. You are going on the old law which, I believe, prevails in every State in the Union that where improvements are put on real estate belonging to another, the improvements would remain there at the disposition of the owners of the real estate unless it is expressly stipulated in the contract that they should be common improvements.

Mr. DENT. Exactly.

Mr. FIELDS. I do not desire to ask any questions Mr. Chairman, but right at this point, my recollection of these two acts of May 18, and July 18, and my conscience and sense of fairness compel me to make a little statement in regard to those acts, or one of them at least.

At the time when Mr. Dent, now appearing as counsel for the Alabama Power Co., was chairman of the Committee on Military Affairs, and I as the ranking majority member of that committee had a share in the perfecting of legislation that was enacted. I do not recall whether it was the act of May or the act of July, but I do recall that when the Secretary of War sent his draft to the committee and requested that it be enacted into law, Mr. Dent, then the chairman of the committee, did not approve of the idea of it, in that it would confer upon the War Department powers that he thought were too broad. I differed with him and took the view of the Secretary of War, and the committee, over the protest, as I recall, and against the vote of the chairman, voted out the bill I am referring to. Whether it was the act of July or the act of May I do not now recall, but I do specifically recall that the chairman of the committee opposed the legislation.

Mr. DENT. I had forgotten, Mr. Fields; you are probably correct about it.

Mr. FIELDS. Remembering that, I thought I should make that statement at this point.

The CHAIRMAN. Of course at that time, we were in the midst of war, and we were sending our men as fast as we could get them across to the other side. During the month of July 300,000 soldiers were sent across the water to join our forces at the front. We were moving very rapidly, and I am inclined to believe that there was not any Member of Congress in those days that was fearful of kicking up a mare's nest. The committee tried in every way possible to make it absolutely certain that this country would do everything it could do, and as speedily, to bring about a successful conclusion of the war, so we could get our soldiers back home and settle down once again to peace.

Mr. FIELDS. I made my statement, to be perfectly frank, remembering, as I did, the circumstances, calling attention to the fact that Mr. Dent, who now contends for the legal rights of his client under this law, was not responsible for the enactment of the law.

Mr. DENT. I am very much obliged to you. I did not remember how I stood on it.

Mr. FIELDS. I remember very well, and I felt that it was only just to you that I should make that statement.

Mr. DENT. Whether that was true or not. I know that this was legislation recommended by the Secretary of War and put through at his instance by the vote of the committee.

Mr. QUIN. Mr. Dent, this contract starts out with this language: "This agreement, dated December 1, 1917, between Alabama Power Co., a corporation organized and existing under the laws of the State of Alabama (hereinafter called the 'contractor'), party of the first part, and the United States of America, by William Williams, lieutenant colonel, Ordnance Department, United States Army, acting as contracting officer, by authority of the Chief of Ordnance, United States Army, and under the direction of the Secretary of War, party of the second part, witnesseth," etc. And then, at the time this contract was signed, on the 7th day of November, this language is used: "You are hereby authorized to act in my stead as contracting officer for all purposes and in all respects contemplated by the contract dated the 1st day of December, 1917, between the Alabama Power Co. and the United States of America, by Lieut. Col. William Williams, Ordnance Department, United States Army." That is directed by Lieut. Col. William Williams to Col. J. W. Joyes.

Under the option of that contract all of the things specified to be done by the Alabama Power Co., as well as by the United States, are set forth in a certain number of articles of agreement, are they not?

Mr. DENT. The whole contract is set forth in the agreement.

Mr. QUIN. That was set forth in the agreement.

Mr. DENT. Yes.

Mr. QUIN. And they set them forth and dated it as of the 1st day of December, 1917?

Mr. DENT. It so appears on the face of it, Mr. Quin, as you know.

Mr. QUIN. All of this obligation on the part of the Alabama Power Co. to carry out this agreement was practically done before November, 1918?

Mr. DENT. You are asking me something about something I do not know anything about. I did not have anything to do with the making of the contract. Mr. Martin testified about that. I knew nothing about this contract until three weeks ago, so I could not tell you how much work was done under it, or anything about it.

Mr. QUIN. Then this contract speaks in specific language, does it not?

Mr. DENT. Certainly.

Mr. QUIN. There is no doubt about that in my mind.

Mr. DENT. I do not know where else it could speak.

Mr. STOLL. Do the Alabama Power Co. and the United States Government own any property as tenants in common?

Mr. DENT. Not that I know of, Mr. Stoll.

Mr. STOLL. The property at the site of Dam No. 3 is owned by the Alabama Power Co.?

Mr. DENT. That is my understanding.

Mr. STOLL. I believe you concede that the Government has a right to condemn that?

Mr. DENT. Yes.

Mr. STOLL. Is not real property?

Mr. DENT. You mean that in connection with the steam plant?

Mr. STOLL. Any of the property that the Government and the Alabama Power Co. owned together and operate together is personal property, and not real property, is it not?

Mr. DENT. That is a legal conclusion.

Mr. STOLL. I am asking you.

Mr. DENT. If the contract is valid on the payment of the amount of the award to the Government for the Government expenditures down there, all the property would become the property of the Alabama Power Co.

Mr. STOLL. I did not ask you that. I say the property, if you wish to term it so, in dispute is personal property, or is it real property, too?

Mr. DENT. I think that is a legal question. I doubt if it is personal property.

Mr. STOLL. I thought you were testifying as a lawyer.

Mr. DENT. No; I am not testifying as a lawyer; I am simply expressing an opinion as a lawyer. If you want my opinion as a lawyer, I think it is——

Mr. STOLL (interposing). That is what I want.

Mr. DENT. Part of the realty.

Mr. STOLL. Part of the realty?

Mr. DENT. Yes.

Mr. STOLL. The realty is vested in whom?

Mr. DENT. The realty is vested in the Alabama Power Co.

Mr. STOLL. Who put up the money to build the additional buildings that were put on the realty?

Mr. DENT. You know as much about that as I do, Mr. Stoll, and I only know from the testimony that the Government put it up.

Mr. STOLL. That was put up by the Government.

Mr. DENT. Yes.

Mr. STOLL. Under the national defense act of 1916, which provides for these activities at Muscle Shoals, the prime object of that legislation was to develop nitrates for munitions and nitrates for fertilizer?

Mr. DENT. Yes.

Mr. STOLL. That requires power, and the dam had not yet been completed; that is true, is it not?

Mr. DENT. I do not know whether it had even been started, but it certainly had not been completed.

Mr. STOLL. And the reason why the power of the Alabama Power Co. was secured was for the purpose of operating this plant as speedily as possible.

Mr. DENT. The purpose of constructing it as speedily as possible.

Mr. STOLL. And also operating?

Mr. DENT. Of course, the operation was to follow the construction.

Mr. STOLL. Then it became a vital part and parcel of the plant, did it not?

Mr. DENT. The steam plant?

Mr. STOLL. Yes.

Mr. DENT. I think not.

Mr. STOLL. Why? It was used in connection with that, was it not?

Mr. DENT. No; it simply furnished power while the construction was going on, temporarily.

Mr. STOLL. I understand, but did they not use the power to make nitrates?

Mr. DENT. In this plant at Gorgas?

Mr. STOLL. Yes.

Mr. DENT. No.

Mr. STOLL. No; at plant No. 2, and nitrate plant No. 1?

Mr. DENT. Yes; they finally, I believe, about the time of the armistice, were beginning to make nitrates at one of those plants at Muscle Shoals.

Mr. STOLL. Your company is connected up with nitrate plant No. 2 and furnished power to it, did it not?

Mr. DENT. Yes.

Mr. STOLL. Was not that for the purpose of making nitrate?

Mr. DENT. I think not; it was for the purpose of enabling them to construct the plant, furnishing them power until they got the plant into condition as an operating and going concern, until they got their own power.

Mr. STOLL. But they still had not gotten the power; that is the point.

Mr. DENT. They had gotten the steam power, the same as we have.

Mr. STOLL. Is that all that is necessary to operate that plant—the steam power they have got?

Mr. DENT. No; I think it is absolutely essential that they should have water power to accomplish the purposes that they set out to accomplish.

Mr. STOLL. Let me put it this way: They can use the electrical power they get from the Alabama Power Co. on this plant for the making of nitrates for making fertilizer?

Mr. DENT. I am not an expert on that subject, Mr. Stoll. I do not know.

Mr. STOLL. If that is a fact, that they can utilize the power, and if the Government built or caused to be built a line 85 miles long that must have been necessary, then that must be part and parcel of this plant, must it not?

Mr. DENT. That is purely a matter of argument.

Mr. STOLL. Do you not think from that viewpoint it is a part and parcel of it?

Mr. DENT. No; I can not agree with you about that. They can utilize the power from Lock No. 12 on the Coosa River. They could run a transmission line up there and they could utilize that, but you would not have them condemn Lock No. 12, below Birmingham, on the Coosa River.

Mr. STOLL. This is a project where the Government put in its money and built this line for some purpose under the national defense act, and that purpose was to make nitrates. If the Government still intends making nitrates or fertilizers, as provided for in the act—and they need it—why can they not condemn it and take it?

Mr. DENT. Because I do not think it is necessary in order to accomplish their purpose. Of course, all of this is purely a matter of argument between you and myself. So far as I see it, I can not see the absolute necessity—the essential necessity—of having to use this plant to operate the nitrate plant at Muscle Shoals, which ultimately is to be operated, if you are going to operate this plant at all, according to the testimony before this committee, by water power.

Mr. STOLL. I know that, but I am talking about the purpose for which the United States Government spent this money to get this transmission line. If the Government is to still carry out this purpose, why is it not a part and parcel of it?

Mr. DENT. I think I can answer that by asking you a question, and that is, if the Government intended to use the Gorgas plant in connection with the further development of nitrogen from the air, why did the Government contract to sell the plant back to the Alabama Power Co. if the Government intended to use it as a permanent proposition?

Mr. STOLL. They had a very foolish officer to make that kind of a contract, in my opinion.

Mr. GARRETT. Mr. Dent, if the date of the contract between the Alabama Power Co. and the United States of America, as shown by the hearings, or if the contract, as a matter of fact, was executed on December 1, 1917, what law would have governed the rights of the parties?

Mr. DENT. The law then in existence, if there was any, and, as I recall, there was no law authorizing the contract at that time. If that was the true date——

Mr. GARRETT (interposing). As a matter of fact, I understand that is not the true date, but that is the date the record shows.

In the statement you made a moment ago you said that the conversation, the correspondence, and the memoranda leading up to a written contract was the controlling thing, and that is generally accepted under the law of contracts. But to my mind that is not the thing before the committee. That is not the question involved as a general proposition.

The question I am trying to get at now is this: That these parties did reach by correspondence and memoranda, as shown here, an agreement, and that they began to operate under that agreement; and that then the contract was finally executed in New York instead of Washington, D. C., where it says it was executed, and that practically all the performance had been had.

Now, comes the question I want to have answered, which is this: If the minds of the parties reached a sufficient conclusion so that they could begin to operate and did operate under the contract that was actually executed at some future date, would not the law upon the date upon which they reached their understanding and began the work and began the execution of the contract, control the rights of the parties instead of the law that happened to be in force at the time of the actual final execution of the agreement?

Mr. DENT. I can not agree with that as a legal opinion. I am expressing my own legal opinion. My own opinion is that the final draft of the contract, duly excuted by the parties, is the controlling evidence of the contract between the parties, and that all previous negotiations are merged into that written instrument.

Mr. GARRETT. But that is only the evidence of the contract.

Mr. DENT. Sure.

Mr. GARRETT. The contract had finally been executed and the work performed prior to its execution.

Mr. DENT. According to your argument, that contract does not amount to anything at all; it was a mere useless formality.

Mr. GARRETT. I am not expressing an opinion upon that, but I am trying to get at what the facts are. As a matter of fact, they performed all of the work they had to do without a written contract; is that not true?

Mr. DENT. Most of it; I understand Mr. Martin testified that when the contract was finally executed in November, 1918, 95 per cent of the work was done. But I contend that the fact that they did this, even under informal arrangements between them and the Government constituted sufficient consideration after the law was passed for the execution of that contract in November, and that contract is the final memorial of the agreement between the parties.

Mr. GARRETT. As a lawyer, let me ask you this question: If they performed work not under an executed contract, but under an agreement which was reached by correspondence, and memoranda, and telegrams, and letters, would not their rights then be on a question of quantum meriut and not on a question of specific contract execution?

Mr. DENT. That would be involved if they had not finally put the contract into written form and duly executed it. That applies as between individuals and not as between a party and the Government, on account of the fact that Government contracts must be executed in a certain way or otherwise they are void. I think that is the rule of the Comptroller of the Treasury.

Mr. GARRETT. If this contract had been executed on the date that it is purported to have been executed, according to the record, then the law on the 1st day of December, 1917, would control and not the law on the 7th day of November, 1918.

Mr. DENT. That is very true.

Mr. HULL. Mr. Dent, as I understand it, you believe that the Government should not make a contract with Mr. Ford, owing to the fact that the Alabama Power Co. has a prior right on the Gorgas plant; is that correct?

Mr. DENT. My proposition, Mr. Hull, is that the Government ought not to enter into a contract with Mr. Ford in accordance with the proposition as it is now pending, which includes the farming out, so to speak, of our property to Mr. Ford; that is, the steam plant at Gorgas.

Mr. HULL. Is the objection addressed to the steam plant or the transmission line?

Mr. DENT. It is both; they both belong to us.

Mr. HULL. The Government took the transmission line, did it not?

Mr. DENT. No. The Power Co. built it, but the Government loaned them the money during the war for that purpose.

Mr. HULL. Who owns the transmission line?

Mr. DENT. I think the Alabama Power Co. owns it, but the Alabama Power Co. was under contract to pay the Government for the value of the property that was put in there with its money.

Mr. HULL. The transmission line was not there before the war?

Mr. DENT. No; neither was the addition to the steam plant.

Mr. HULL. But the steam plant, as I understand it—and I do not know, of course—was so built that you can not take over one without taking over the other.

Mr. DENT. That is true.

Mr. HULL. But the transmission line is not in that shape, as I understand it.

Mr. DENT. As I said a little while ago, Mr. Hull, I am not an expert in matters of that kind, and I do not know anything about it; I suspect that that is true. It may be they could take over the transmission line without the plant, but that is not in my line, and I am not an expert on that subject.

Mr. HULL. I am simply trying to get the right angle on the proposition. It is very hard to understand it without seeing it.

Mr. JAMES. Mr. Dent, will you turn to part 3 of the hearings, at page 168? At the bottom of the page you will see what is marked "1st indorsement." When Mr. Quin read that a while ago, did I understand you to say that that was authority given by Maj. Gen. C. C. Williams to Lieut. Col. William Williams to sign the contract?

Mr. DENT. I did not know that Mr. Quin read this to me.

Mr. JAMES. You were asked that question.

Mr. DENT. Mr. Wurzbach asked me some questions as to whether there was any contract, whether the contracting officer had authority, and I referred to the memorandum at the bottom of the contract which is signed by Maj. Gen. C. C. Williams, Chief of Ordnance.

Mr. JAMES. Is this the exact language?

Mr. DENT. And I notice that you read it this morning to Mr. Martin.

Mr. JAMES. Do you think that is the authority of Gen. Williams given to Lieut. Col. Williams?

Mr. DENT. I would presume that is a written authority.

Mr. JAMES. That is a memorandum from the Chief of Ordnance to Col. Joyes.

Mr. DENT. Which one are you referring to, the one signed by C. C. Williams or the one signed by William Williams?

Mr. JAMES. The one marked "1st indorsement"; that is, the one you read in response to the question asked by Mr. Wurzbach as conferring upon Lieut. Col. William Williams authority to sign the contract.

Mr. DENT. Yes. That was the memorandum; I read that as a memorandum at the end of the contract showing that it was Gen. Williams's indorsement of the signing of the contract by Lieut. Col. Williams.

Mr. JAMES. But the communication is not to Lieut. Col. Williams, but to Col. Joyes.

Mr. DENT. That is because of the fact that Col. Joyes in this memorandum is designated as the contracting officer thereafter to carry out the contract, and that was signed by Gen. Williams.

Mr. JAMES. I asked Mr. Martin this morning if the communication just above that on the same page dated November 9, 1918, was the one in which Col. Williams gave his proxy to Col. Joyes to sign in his stead, and Mr. Martin said that had nothing to do with the contract, that it was simply a matter of form followed by the Army officers, and if that is true, then that means nothing else except that Col. Joyes is to relieve Col. Williams and has nothing to do with the contract, as Mr. Martin said this morning.

Mr. MARTIN. That is my impression, that at the time Col. Williams concluded the negotiations he was relieved so far as the performance of the contract was concerned, passing the authority to Col. Joyes.

Mr. JAMES. Then that brief indorsement does not confer any authority upon Col. Williams, but it simply means he was relieved by Col. Joyes, and it had nothing to do with the contract.

Mr. MARTIN. The communication marked "1st indorsement," as Mr. Dent points out, is the recognition by Gen. Williams of the fact of the execution of the contract by Lieut. Col. Williams.

Mr. JAMES. But it is not an order from Gen. Williams authorizing Col. Williams to sign any contract.

Mr. MARTIN. Undoubtedly there is such an order.

Mr. JAMES. If there is such an order, I think it must be in some other place.

Mr. DENT. If any question is raised about the authority of Col. Williams to sign the contract, I should like to produce Gen. Williams to make proof of that.

Mr. JAMES. Mr. Wurzbach raised that question.

Mr. DENT. It would be a question of but a short time to prove it. I thought it was in the record.

The CHAIRMAN. I had the impression that Gen. Williams did testify to that effect.

Mr. DENT. If the technical point is going to be raised we can easily overcome it by producing a witness himself who can testify to that. He has told me so himself, that the contract was properly executed and it ought to be carried out.

The CHAIRMAN. I will say this, that to-night I will read Gen. Williams's testimony, and if I find the testimony does not show affirmatively what he said regarding the matter we will give you notice and you can ask Gen. Williams to appear to testify in that regard.

Mr. CROWTHER. Take the last clause of the contract. I would like to ask whether this clause has anything to do with the date. It says, "In witness whereof the parties hereto have caused these presents to be executed and delivered in quadruplicate at Washington, D. C., the year and date above written."

Mr. DENT. That is simply a repetition of the first clause. The parties, in other words, can adopt any date they want to when they sign a contract, provided it is not signed on a Sunday or some day that is illegal. They can adopt any date they want to; but when it comes to the proof of the actual date of execution the law always permits the proof to be established by parole evidence.

Mr. CROWTHER. What is the meaning of this being delivered in quadruplicate at Washington?

Mr. DENT. I do not know.

Mr. CROWTHER. That was executed in New York, was it not?

Mr. DENT. Yes. I was not representing the power company at that time and I know nothing about it. I presume that the form of the contract was prepared with the idea that it would be signed in Washington, and written that way, and the parties happened to meet in New York and signed it there without making any change in it. They can also adopt the place as well as the time, but the proof as to the time can always be established by parole evidence.

Mr. CROWTHER. Your contention is and you would hold as a lawyer that this contract dated from the time of its signature in New York?

Mr. DENT. And delivery. Without that no contract is good. It has not only to be signed but delivered before it has any vitality.

Mr. CROWTHER. The date of December 1, 1917, does not mean anything, really.

Mr. DENT. It means nothing, except that the parties adopted it for some reason, I know not what; it may be because that was the date when the original transaction began.

Mr. CROWTHER. You glean from the questions that have been asked that some of the lawyers on the committee do not agree with that conclusion.

Mr. DENT. Yes.

Mr. CROWTHER. I think Mr. Garrett suggested that he did not agree with that.

Mr. DENT. Yes; Mr. Garrett seemed to have a different opinion.

Mr. FIELDS. Mr. Dent, I gather from following you that your contention is that the Gorgas steam plant does not come within the provisions of the national defense act, because it is not a part of plant No. 2 for the production of nitrates or necessary for the operations of plant No. 2.

Mr. DENT. Yes.

Mr. FIELDS. If the Government had continued the operation of plant No. 2 from the time it operated it up to this time and found that the Gorgas steam plant was essential to the operation of plant No. 2 there would be no question as to the Government's right to hold it.

Mr. DENT. If your premise is conceded that would be true, but that would be begging the question.

Mr. FIELDS. If they found that essential.

Mr. DENT. That is the very question we raised, that it is not essential.

Mr. FIELDS. I am trying to get this straight in my own mind. It has been my understanding—and I may have a wrong understanding—that this plant and the steam plant at nitrate plant No. 2 were both constructed with a view to using them to supplement the water power at the time of low water in the operation of the nitrate plant, if it should be operated by hydroelectric power in the future.

Mr. DENT. I think you are mistaken about the facts in regard to that.

Mr. FIELDS. Let us go back to the Government's operation. If the Government should have determined, after it had made a test of that plant, to continue the operation of that plant for the production of nitrogen for fertilizer, and found that the maintenance or the retention of the Gorgas plant was essential to the continuous operation of plant No. 2, evidently there would have been no question as to the right of the Government to hold that property?

Mr. DENT. That might be true, Mr. Fields, if your premise is conceded, that they found it absolutely essential to the maintenance of the plant. But you are overlooking, perhaps, this fact, that the company owned this plant at Gorgas prior to the time the Government went in there, and the Government simply put up the money for the equipment of that plant, and that plant still belongs to the company, subject only to the right of the Government to obtain power.

Mr. FIELDS. I base my premise upon the fact that the Government realized that it would need this power for the operation of nitrate plant No. 2.

Mr. DENT. You mean the permanent development at Muscle Shoals.

Mr. FIELDS. Whether it be permanent or temporary, because the line has not been drawn between temporary operation and permanent operation. Indeed it was for the operation of that plant, otherwise it would not have invested its money and built the transmission line.

Mr. DENT. I do not think that is correct. As I understand it, they added to the plant at Gorgas and loaned the money to build the transmission line so they could have energy pending the time their plants were under construction.

Mr. FIELDS. Is there anything in the contract stipulating the time when the Government shall discontinue the use of the Gorgas plant after the construction of the dam?

Mr. DENT. The contract, Mr. Fields, authorizes the power company at any time to purchase this additional equipment from the Government, even before the work at Muscle Shoals was finished, as I understand Mr. Martin.

Mr. FIELDS. That is, at any time after the Government determined to discontinue the plant?

Mr. DENT. No; at any time under the contract the Alabama Power Co., after the construction of this additional equipment and this transmission line, could have demanded of the Government, if they were ready to pay for it, that the property be sold to them upon the payment of the value, the Government reserving the right to demand of the power company that they continue to supply power, pending the construction of this plant at Muscle Shoals.

Mr. FIELDS. I have read the contract, and I am frank to say I overlooked that point in it.

Mr. DENT. That is the reason I asked Mr. Stoll that question, if he thought the Government intended to use this permanently, why is it they agreed to sell it to the Power Co.?

Mr. FIELDS. Here is the point that has been in my mind, if this plant paid for by the Government, and this transmission line paid for by the Government are essential to the continuous operation of nitrate plant No. 2 they might need to use this plant all the time and use it in time of low water, when they did not have sufficient hydroelectric power at Muscle Shoals—why it was not a part of the scheme under section 124 of the national defense act, and if the Government could hold it as such in the event the Government should determine to continue the operation of nitrate plant No. 2, what would be the difference between the Government and the Government's lessee?

Mr. DENT. There would not be any, but I do not concede your premise, because the contract, if it is going to be sustained, if it is valid, between the Government and the company, says on its face that the Government could not utilize this steam plant at Gorgas in connection with the permanent operation at Muscle Shoals, because it provided that it could demand of the power company that they purchase back the equipment that they added to the power company's property; and on the other hand, that the company had the right to demand of the Government that they sell it to them.

Mr. FIELDS. I remember that language, but I had the impression that that was in the event that the Government should determine not to use it.

Mr. DENT. There is no event; that is absolute. Those provisions are absolute and contain no condition whatever.

Mr. FIELDS. Going back to the contract of December 1, 1917, I am the member of the committee who referred to the meeting of the minds prior to the date of the signing of the contract to which you referred in your remarks to the committee. I am not a lawyer, as my former chairman well knows, and as a layman I get mixed on these things. Here is one thing you have not made clear to my mind yet. If that agreement of December 7, 1917, was not a contract, a legal, valid contract, where did the accounting officer of the Government have the authority to pay out money for work under that contract?

Mr. DENT. The only authority that I know of, Mr. Fields, is that he was acting under the various appropriations passed by Congress to carry on the war.

Mr. FIELD. We know that the accounting officers are very particular about contracts as they relate to accounting purposes.

Mr. DENT. They were not so particular during the war.

Mr. FIELDS. Then, there is another thought that has been running through my mind. This act of July 9, 1918, under which you claim legal title, authorizes the Secretary of War to sell property, but does not authorize the Secretary of War to option property for future sale. From the legal point of view would there be any difference between the sale of property and the optioning of property?

Mr. DENT. I think not. The greater always includes the less, and in law the right to make a sale carries with it the right to make a contract for sale.

Mr. FIELDS. There is another thing that is not exactly clear in my mind, and that is whether that law gives the heads of the department, or vests in them, the right to sell, and give an absolute title to the property, or to sell it in the regular way and report the sale to Congress, as the Secretary of War has done in the case of the Ford proposition.

Mr. DENT. There is nothing in this act requiring any report to be made to Congress. There is an absolute right to the heads of the department to make a sale.

Mr. FIELDS. To give an absolute title?

Mr. DENT. Absolutely.

Mr. WURZBACH. I call your attention to article 32 of this contract. I suppose you are familiar with the terms. It provides: "The contractor shall, prior to December 1, 1918, furnish to the United States a bond in the sum of $50,000, conditioned upon the full and faithful performance by the contractor of all terms, covenants, and conditions hereof in relation to construction work and upon the prompt payment to all persons supplying labor or materials in the prosecution of the construction work under this contract."

When was that bond given?

Mr. DENT. You will have to ask those questions of Mr. Martin. I am not familiar with the execution of this contract and the circumstances surrounding it. I know nothing more about it than what has been given in the testimony before the committee.

Mr. WURZBACH. I want to ask this question: It is claimed that this contract was executed on November 7, 1918. At that time practically all of the construction work had been completed.

Mr. DENT. That is what the testimony shows.

Mr. WURZBACH. The giving of a bond, or the provisions for the giving of a bond at that time—that is, in November, 1918, after the completion of the work—is a manifest absurdity of the contract, is it not?

Mr. DENT. It depends altogether on the bond. The terms and conditions of the bond might relate back.

Mr. WURZBACH. Is there not a very strong circumstance in the recital in that article that this contract, or at least that part of the contract, had been drafted a long time prior to November, 1918?

Mr. DENT. There is no question about that. As I understood Mr. Martin, there had been a number of drafts of this contract at various times.

Mr. WURZBACH. I did not get that very clearly from Mr. Martin. I think he finally suggested that this contract was prepared and drawn shortly before it was actualy signed, in November, 1918.

Mr. DENT. This particular contract, but there had been various drafts of contracts involving this proposition, prior to that time. That is something I can not testify about.

Mr. WURZBACH. That provision in the contract was really senseless, under all the circumstances, was it not?

Mr. DENT. It looks to me like it might be, unless it was retroactive. Unless it was retroactive, the provisions did not go back to the inception of the work. That would depend on the conditions of the bond. Mr. Martin might answer that better than I can. I do not know the terms of the bond.

Mr. WURZBACH. How many drafts of this contract were actually made?

Mr. MARTIN. I could not tell you.

Mr. WURZBACH. Where are the drafts?

Mr. MARTIN. There were quite a number. I have several of them right here. In reference to the bond, the bond was executed after the execution of the contract on the 7th of November. The Government had a disbursing officer on the work, and the Government disbursing officer took care of practically all the disbursements. There were some disbursements which we were undertaking to take care of, some expenditures we did take care of in completing the work, which lasted over six months. We assumed certain obligations in the completion of the work.

Mr. WURZBACH. When was the bond actually given?

Mr. MARTIN. Some time in November.

Mr. WURZBACH. Between the execution of the contract and December 1, 1918?

Mr. MARTIN. Yes; before the December 1 date.

Mr. WURZBACH. In reply to a question with reference to the authority of Maj. Gen. C. C. Williams for the signing of this contract, the indorsement made on the contract which was read was the same indorsement read by Mr. James, was it not?

Mr. DENT. I think it is.

Mr. WURZBACH. Did you notice that the indorsement is dated November 12, 1918, five days after the Power Co. claims that the contract was actually executed?

Mr. DENT. I did.

Mr. WURZBACH. Clearly that could not have been authority to Col. Williams or Col. Joyes.

Mr. DENT. Not original authority; it could not have been original authority, but could have been treated as a ratification of the signing of the contract.

Mr. WURZBACH. If that is the true date of the order of Gen. C. C. Williams.

Mr. DENT. That is the true date.

Mr. WURZBACH. Then certainly that was not authority to anyone to sign a contract five days prior to that date.

Mr. DENT. That is true, that it was not original authority. But you will notice that order relieves Col. Williams and appoints Col. Joyes to carry out the provisions of the contract for the Government as contracting officer, and I contend that the true date being November 7, 1918, that the naming of Col. Joyes to succeed Col. Williams as contracting officer to carry out this contract is thereby a ratification of the signature of Col. Williams, although no original authority could be claimed for it.

Mr. FIELDS. This layman's mind of mine is not satisfied about this contract, in regard to the question that it does not become a contract until the date on which it is signed.

Mr. DENT. And delivered.

Mr. FIELDS. All right. Your company entered into this agreement on the 1st of December, 1917. Let us take the thing backwards and see how it will work. Suppose that subsequent to the date of the original contract, but prior to its signing, a law had been enacted that would have deprived your company of the legal rights it had under the law on the day the contract was entered into; what would have been your legal status?

Mr. DENT. You can not deprive a party of vested rights by subsequent legislation. If it had vested rights certainly subsequent legislation would not deprive it of those vested rights.

Mr. FIELDS. I understand that. It seems to me a little strange that you can change a contract by just simply holding it open and enacting legislation later on, to change the terms of the contract as entered into.

Mr. DENT. It is just the same as in ordinary life, Mr. Fields. I believe you traveled for a good many years. You perhaps sometimes were in a position where you had to assume authority for your principal. You did not have any direct authority.

Mr. FIELDS. Yes.

Mr. DENT. Subsequently he ratified it. That is exactly the case here.

Mr. JAMES. Following Mr. Fields's question, the way I understand it is, if any legislation was passed after December 1, 1917, that took away any rights from the Alabama Power Co., it would not be legal, if any law was passed.

Mr. DENT. I said you could not take away vested rights. I did not say the Alabama Power Co. had any vested rights, and Mr. Fields's question was predicated upon the assumption that it did have rights on the 1st day of December, and subsequently Congress undertook to take away those rights.

Mr. JAMES. You figure that the minds of Col. Williams and Mr. Martin met about December 1, do you not?

Mr. DENT. No; I do not, because the letter that Mr. Martin read to the committee this morning from Col. Joyes giving his idea of what the contract ought to be, in which he stated emphatically that the contract would be subsequently drawn up was dated December 7, 1917, shows that the contract could not have been executed on the 1st day of December, 1917.

Mr. JAMES. Then you figure that their minds met about December 7, 1917?

Mr. DENT. I think their minds met for the purpose of the power company proceeding to go ahead with this work under instructions from the War Department. I think they met to that extent. But I contend that when the contract was finally put in form and duly executed by both parties, that constituted a memorial of the contract which can only be looked to, all previous transactions being merged in that complete written instrument.

Mr. JAMES. If any legislation was passed after December 7 which took away the rights which the Alabama Power Co. figured they had, you would not figure that was legal.

Mr. DENT. They did not have any rights. If you feel about it as Mr. Fields did, that the Alabama Power Co. had the right to enter into a contract on December 1, and the Government had a right to make it on December 1, and they actually made it on that day, I say Congress could not subsequently destroy the vested rights they had under a valid contract.

Mr. FIELDS. I do not think you understood my question.

Mr. DENT. Perhaps I did not, Mr. Fields.

Mr. FIELDS. Let us say that on the 7th day of December, 1917, the officers of the War Department had the right under the law to option or to sell this property to the Alabama Power Co., to enter into a legal contract, which you claim you have, and that agreement was made between the Government and the Alabama Power Co. on the 7th day of December, 1917, and they went ahead in performance of the contract. On the 9th day of July following Congress enacted a law which took away from the War Department the right to enter into such an agreement of sale or option. Then you come with a contract dated the 9th day of November, 1918, which provides that the Alabama Power Co. shall have the right to purchase this property. You have a contract there that you say is valid only from the date on which it is signed, and yet on that date there is no law authorizing that to be done.

Mr. DENT. Then it would not be valid. As I understood your question originally, Mr. Fields, you assumed that on the 1st day of December, 1917, both the Government and the power company had the right to make a contract, and that they actually made a contract on that date. I said that if subsequent legislation undertook to destroy that right it would be destroying vested rights, and that can not be done.

Mr. FIELDS. I said enter into an unsigned agreement.

Mr. DENT. That would not have been valid under the law. An unsigned agreement is not valid against the Government, because of the statutory form required in making contracts with the Government.

Mr. MCKENZIE. We are very much obliged to you, Mr. Dent, for the statement you have made to the committee.

Mr. DENT. I am very much obliged to you, Mr. Chairman and gentlemen.

(Thereupon at 4.35 o'clock p. m. the committee adjourned to meet Tuesday, February 28, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Tuesday, February 28, 1922.

The committee met at 10.30 o'clock a. m., Hon. John C. McKenzie (acting chairman) presiding.

Mr. MCKENZIE. Gentlemen of the committee, Mr. Oliver, one of our colleagues, is present and desires to make a brief statement this morning. We will now hear Mr. Oliver.

STATEMENT OF HON. WILLIAM B. OLIVER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA.

Mr. OLIVER. I appreciate very much, Mr. Chairman, this courtesy you extend me. I share, in common with the committee, a very high and sincere regard for our former distinguished colleague, Mr. Dent, but I differ very widely with Mr. Dent as to certain legal phases of the contract set up by the Alabama Power Co., and under which the company claims the exclusive right to purchase the Gorgas power plant and transmission lines now owned by the Government, and my purpose in requesting the committee's indulgence for a few minutes is simply to present some contrary views on the legal questions discussed by Mr. Dent.

I will state in this connection that it is the purpose of the Alabama delegation to ask the committee at a later day, when the hearings have been concluded on both offers, for a short time in which some one member may discuss the facts.

(Mr. Kahn at this point came into the committee room.)

Mr. MCKENZIE. Mr. Oliver, if you will pardon me, I wish to state to the members of the committee and the gentlemen present that this is the birthday of our honored chairman, and I am sure you will all join with me in wishing him many, many happy returns of the day. [Applause.]

Mr. OLIVER. I wish to join with Mr. McKenzie in extending my sincere congratulations, and I hope that the distinguished chairman will remain with us in Congress as long as Uncle Joe Cannon has.

In order that we may have some idea as to the power of the National Government to condemn, from a viewpoint entirely different from that announced by Mr. Dent, I will state that my study of the authorities leads me to conclude that there can really be no two opinions as to the power and extent of the National Government's power to condemn. It does not extend alone to property essential to the permanent operation of a Government project or plant, but it likewise extends with equal force to any property that may be economically necessary for the construction of such plant or project, or for the temporary operation thereof, and I think the authorities are uniform on that proposition.

Aside from that, the question was suggested by Mr. Martin in his statement, and also by Mr. Dent, that in all condemnation proceedings it must be shown to the court that there is a public necessity for the taking of the property sought to be condemned.

Now, when Congress directs that any property be taken in connection with a public project, such action by Congress precludes all further inquiry, gentlemen, into the question of necessity. I think the authorities are uniform on that proposition.

In other words, here is a plant at Muscle Shoals constructed, whether with the $20,000,000 appropriated in the 1916 national defense act or not is immaterial, since confessedly it was constructed pursuant to the purpose and declared will of Congress as expressed in the 1916 act. It was to serve the Government both in time of war and in times of peace; in other words, it was not a plant built or authorized for a war emergency alone, but was a plant constructed for a broad national purpose, continuing in war as well as in peace, and the steam-power unit at Gorgas and transmission lines therefrom were paid for and acquired by the Government for the purpose of economically aiding in the construction of the Muscle Shoals plant and for the operation of said plant.

You may say that perhaps that power was only to be used, as the officers thought, during the time that the locks were being constructed for the development of hydro-electric power; but the officers could not determine what use Congress or the Nation might later determine to make of a power adjunct to the plant at Muscle Shoals, paid for and constructed for the Government.

The point I make is that the Gorgas power unit was a plant to supply the electric energy and power to operate a national project, selected, set apart, and built pursuant to the directions of Congress, as expressed in the national defense act of 1916, and if now Congress should accept an offer providing for the maintenance and operation of that plant, so as to conserve the two national purposes, as expressed in the 1916 act, and in that connection should direct that this Gorgas plant be condemned and taken over, the necessity for thus taking it over could not arise in any court; because the action of Congress will be conclusive on that point as to any court inquiry hereafter, and I can not believe that any lawyer will assail or take issue with that proposition.

You gentlemen are familiar with that line of authorities, holding that, though valuable private or public rights or quasi public rights may have been acquired, if, afterwards, the State, in its wisdom through its legislative body, sees fit to open a public street through such property; that it has the right to do so. The leading case on that subject came up from Illinois, as Mr. McKenzie, I know, will recall, and went to the Supreme Court, and the court decided that the necessity was to be determined by the legislative body, where they saw fit to act, and their action was conclusive afterwards on any inquiry in the courts as to the necessity of taking the property designated in the act for the street.

Coming down to certain acts of Congress which Mr. Dent seems to lay stress on, and on which Mr. Martin, as I understand, bases altogether his contention that this is a legal contract, I wish to call your attention, before discussing the two acts of May 10, 1918, and July 9, 1918, to that clause or article of the contract, which they insist gives the Alabama Power Co. the exclusive right to purchase this property.

It is article 22 of the contract, and you will note that it only gives to the Government "at any time subsequent to three years after peace is declared" the right to call upon the Alabama Power Co. to purchase this plant; note the language—"three years subsequent to the declaration of peace." The Government until this three years has elapsed is denied all right to sell the property, but may after such time call on the Alabama Power Co. to purchase the plant. It develops from that article, as you read it, that the evident purpose of the Alabama Power Co. in thus seeking to require a postponement of the Government's right to sell this plant, was to reserve for itself the right to enjoy the use of it during such time, and the article undertakes to provide that the Government must pay a large amount for the use of current to be furnished the Government or its assignees. Thus contemplating that the Government, pending the time the power company had reserved for itself the use and possession of the Gorgas plant, might dispose of the plant at Muscle Shoals, and if so, this article undertakes to fix the charge that the assignee shall pay for current supplied from the Government steam plant at Gorgas, and which the Alabama Power Co. claims the exclusive right to operate or purchase until three years after peace is declared.

In a subsequent provision of that article, the Alabama Power Co. reserves the right at any time during this period, ending three years after peace is declared, to call upon the Government to sell the plant to it, and to credit as part payment on the value of the plant to be thus fixed by arbitration, if not agreed on, any amount to its (the Alabama Power Co.'s) credit out of the amount the Government or its assignee is required to pay for current supplied during such option period. The whole plan being that during the time the Government is deprived of its right to sell the power company may use the plant, selling current therefrom to the Government at a price so fixed in the contract that it might partly or wholly amortize the value of the plant, during the time the power company has reserved to itself the right to purchase, if it so elects.

But that is not the only remarkable thing in article 22 of the alleged contract. It provides that in the event the Government does not see fit to call on the Alabama Power Co., after this delayed time, to purchase, or in the event

the Alabama Power Co. fails to call on the Government to sell, that then the Government shall have as its only right the authority to remove the buildings, machinery, transmission lines, and other property. So that article of the contract does not necessarily show a complete sale at all; in other words, it shows that there may never be a sale under article 22 of the contract, and that the Government may, in future, take its property and move it off as personalty.

When that statement as to article 22 is applied to the two acts in question, I think you will find the contention of Mr. Martin and of Mr. Dent to be wholly unsound, no matter how liberal may be your interpretation of the power conferred by Congress on the President or the head of an executive department of the Government to sell.

Let me, however, call your attention to a further fact. The act of May 10, 1918, and the act of July 9, 1918, relate alone to property acquired by the Government or purchased by the Government for the war emergency. These acts never had in contemplation, if you will read them, any property acquired by the Government for future use after the war was over, as the plant at Muscle Shoals was, because that plant was to be retained for all time to serve the country in peace as well as in war. So the acts of May 10, and July 9, 1918, conferred no authority on the President or the head of an executive department to sell the plant at Muscle Shoals or its power unit at Gorgas.

But it is not necessary to assume that in order to show the absolute fallacy of the contention of the Alabama Power Co. in this case. Take, for instance, the act of May 10, which Mr. Dent passed loosely over and said perhaps it did not apply, or he thought that the act of July 9 was fuller and he was not insisting so much on the May act, but I will read it in connection with the July 9 act:

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That during the existing emergency the President be, and he is hereby, authorized in his discretion and upon such terms as he shall deem expedient, through the head of any executive department, to sell any supplies, materials, and so on."

You will find that the words "supplies, materials, and so on" relate to war emergency supplies and could not by any stretch of the imagination relate to a plant constructed for permanent use by the Government in war as well as in peace time.

Now, evidently, when some one came to consider this act of May 10, they found that Congress had vested the power solely in the President, and had used the words "in his discretion and on terms to be fixed by him." The act of July 9 was evidently framed with a view to somewhat broaden that power, and since there is no contention on the part of the Alabama Power Co. that the President ever, in the exercise of his discretion, fixed the terms on which any property was to be sold, Mr. Dent well said, "We will pass that by." But he contends that under the act of July 9, 1918, the power was broadened as follows:

"That the President be, and he hereby is, authorized through the head of any executive department to sell, upon such terms as the head of such department shall deem expedient, to any person, partnership, association," describing likewise war emergency property.

I wish to call your attention first to the fact, and doubtless the members of the committee have already thought of it, that the term "executive department" has a well-defined meaning, and when Congress authorizes the President or the head of an executive department to do an act, you are not at a loss to know on whom Congress is conferring authority, and the changing heads of bureaus and of bureau establishments when such language is employed are never in the contemplation of Congress, nor can there be found any statute or any decision construing the words "head of an executive department" as designating a bureau or any subordinate agency of any of the executive departments.

The Revised Statutes, 158, 159, and 160, define an executive department to be 1 of the 10 departments of the Government, and when you say the President or the head of an executive department, of course, you mean the President or one of the Cabinet officers who is at the head of an executive department. We have but 10 executive departments, and throughout the Revised Statutes and throughout all the decisions, whether you take the decisions of the courts, or those of the comptroller in the past, or of the budget officer at present, they

have all uniformly recognized that the "head of an executive department" has reference alone to one of the 10 Cabinet officers of the Government. Congress would not in conferring important powers upon the President link therewith the words "or a bureau head" and thus give to the bureau head the same power given to the President. Of course the only department Congress linked with the President in the conferring of important powers by the July 9 act was a Cabinet officer, who alone is designated as the head of an executive department.

So this discussion by Mr. Dent and others as to whether Gen. Williams, of the Ordnance Bureau, gave any written authority to the reserve officer, Lieut. Col. Williams, to sign this alleged contract, is wholly irrelevant and immaterial, because you must show, if your contention is correct, that the head of an executive department had the right to sell this class of property, and if he delegated such authority, that it was properly delegated and such delegation confined to acts not involving judgment and discretion requiring the personal exercise or approval by the head of an executive department.

Now let us carry the analysis of this act of July 9 a little further, and I call your attention especially now to a proviso, important indeed, in determining the extent of the authority that Congress sought to confer even upon the President or the head of an executive department in the sale of war-time emergency-acquired property.

Congress did not when it passed that act, Mr. Chairman, leave it simply as a broad, unlimited authority conferred for all time to make sales, but it placed an important qualifying clause on the authority to sell in the act of July 9, 1918. The reason why I called your attention to what section 22 of the Alabama Power Co. contract provided, as to the postponement of the Government's right to sell, was to show that under this alleged contract with the Alabama Power Co. the Government is absolutely precluded from selling the Gorgas steam plant until three years after peace is declared. Now listen to the proviso and see whether that proviso has been or can be complied with by any officer seeking to bind the Government in what the Alabama Power Co. claims is an exclusive right given it to purchase.

"*Provided further*"—this is from the act of July 9, 1918—"*Provided further*, That a detailed report shall be made to Congress, on the first day of each regular session, of the sales of any war supplies, materials, lands, factories, or buildings and equipment sold under the authority contained in this or any other act, except sales made to any foreign state or government engaged in war against and government with which the United States is at war."

Making such foreign state or government the only exception, you understand.

"Showing the character of the article sold, to whom sold, the price received therefor, and the purpose for which sold."

How could an agent of the Government, whether the head of an executive department or the President, have complied with that proviso if the alleged contract of the Alabama Power Co. is valid? The Government under that contract can not elect to say, "I wish to sell this property" until three years have elapsed after peace. The Government by some agent has tied its hands, and yet Congress said that in the exercise of the power to sell emergency acquired property the agent on whom we confer authority to sell shall report to the next regular session of Congress; in this case that happened to be December, 1918, since it is claimed the sale was made in November, 1918; and then he must show what? The property sold, the party to whom sold, the purpose for which sold, and the amount received.

This certainly was a limitation, and served notice on the agent and on everyone dealing with the agent that the Government had authorized not a sale or an option to buy property three years after peace, but if any sale was made before December, 1918, the property sold, the party to whom sold, the purpose for which sold, and the amount received must be reported to the December session of Congress. If that be a binding contract, you then construe it as giving to the Alabama Power Co. the right to say to an emergency officer named Williams, "You need not sell us now the Gorgas plant, but you can postpone the Government's right to sell it at all to anyone until three years after peace," although Congress said in conferring authority to sell that the President or head of an executive department, as to all sales made. must report the purchaser and terms of said sale, including price received, to the next regular session of Congress, which as to their alleged sale would have required a report in December, 1918.

But that is not all. There is still another well understood and well recognized rule of law that would prevent an unconscionable contract like this from taking effect, and it is this:

Assume that all I have said in reference to the limitation of the agent to sell is untenable. I do not think it can be assailed, but just assume for the sake of argument that it is untenable, what more do we find has been attempted in this contract to violate the plain language of the act of July 9, 1918, which it is claimed confers authority upon the President or the head of an executive department to sell?

Why, when Congress conferred authority on the President or the head of an executive department to sell by the July 9 act, it clothed the President and the head of such executive department with important, personal responsibilties to be exercised in time of war, involving the selection of property which, without hurt, could be sold; the suitability of the party or Government to whom it could be safely sold; the price to be paid; and the purpose for which sold; yet, lo and behold, we find the Alabama Power Co. and an emergency Government officer entering into a contract whereby the Government has not reserved to the President or to the head of the executive department, who alone were clothed with authority to sell at a fixed price, any right to fix the price of the property; but the Government has postponed its right to sell for three years after peace is declared, and if the Alabama Power Co. elects to purchase under an option given it in such contract, and the price can not be agreed on, then the Alabama Power Co. under this alleged contract may appoint one of the arbitrators to determine the value of the property at such postponed date and the amount to be paid by the Alabama Power Co. therefor. It might be Mr. Martin himself, the man who helped to draw the contract, and assuming that he might be selected by the Alabama Power Co. to sit on this tribunal to fix the price the Government is to receive for this property, he shall have voice, equal with the agent to be appointed by the Government, in the selection of a third party, who together may determine the price the Alabama Power Co. shall pay.

Is there any man who ever studied law for a day that would for a moment contend that where you confer authority to sell large and valuable property upon an agent and confer it upon him and him alone, that the agent has the right, in the exercise of that authority to sell, to delegate to the party who is to buy, the right to appoint some one to fix the price? That is perfectly absurd, and there can be no sane, intelligent insistence that this anomalous contention of the Alabama Power Co., either through its president or its attorney, is tenable or would be enforceable in any court.

I thank you, gentlemen. I would be glad to answer any questions the committee may wish to ask.

Mr. MILLER. Mr. Oliver, you contend that in the act where it designates the President or the head of any executive department, that the head of the executive department can not delegate that power to anybody else?

Mr. OLIVER. I do not think he could delegate the power to the extent of having the price fixed, the property to be sold, the purchaser to whom sold determined by a subordinate.

Mr. MILLER. That is what I mean.

Mr. OLIVER. But even if that be incorrect there would have to be some delegation of that power regularly shown. I am very glad Mr. Miller asked that question, because as showing that even the Secretary of War understood that this alone conferred authority on him, and that before anything could be done pursuant to it there would have to be an order issued by him. I refer you to the order of Gen. Goethals which Mr. Martin read into the record and passed over rather hurriedly, and I am not surprised that he did not dwell on it, because it is against his contention. You will note that the order of Gen. Goethals is "by authority of the Secretary of War, Geo. W. Goethals, major general, Assistant Chief of Staff," and so on. So if there could be any delegation of this authority, it must be in that way by the head of an executive department.

There was evidently no difference of opinion in the War Department as to whom the head of the executive department was. Let me call your attention to that bulletin, as they call it, issued at that time, which was August 3, following the act of July 9, and so far from conferring upon any agent the right to deny to the Government the right to sell this property until three years after peace—and you will remember that that is the language of section 22—or to confer upon any purchaser the right to claim the exclusive right to buy it, if he so elects, let us see what Gen. Goethals said in that order:

"Where increased manufacturing facilities are constructed at the expense of the Government or where their cost is amortized in the price paid by the Government, the contract shall provide that title to such facilities shall vest in the United States. The contractor may agree to take such facilities at a fair value in dimunition of the profits which he otherwise would make.

"Where title to increased manufacturing facilities vests in the United States the contract shall provide that the contractor may make written offer to the Government to purchase such facilities, whereupon, if the Government accepts such offer, the contractor shall become obligated to pay for such facilities at their appraised value at that time."

Is there any insistence here that this contract is a compliance with that, and let us read further:

"The contract shall further provide that if the contractor does not make or the Government does not accept such offer, the Government shall have the right to remove such facilities after the termination of the contract within a time reasonably sufficient to effect such removal. The contract may provide that the Government shall have an option at the termination of the contract to purchase at an appraised value the land on which such facilities are erected."

How carefully they avoided that, you understand, and certainly the contract they set up does not meet any of the conditions specified in the bulletin that I have thus far read.

Now, listen further:

"If, in case of such increased manufacturing facilities, it is desired to make a contract along lines different from those herein established, the approval of the superior board of review shall first be secured."

Is there any contention here that that was ever complied with? None at all. But the emergency officer, the lieutenant colonel, now in Japan, seems to have been the officer who exercised the authority that Congress conferred upon the President and the head of an executive department.

Mr. MCKENZIE. Since Mr. Miller has asked that question, I would like to ask you one question, Mr. Oliver. As I understand you, one of your contentions is that under the peculiar conditions surrounding this plant, you maintain that the Government would have the power to condemn the rights of the Alabama Power Co. in this plant and take over the entire plant, and then the Government would be in position to sell it and deliver it to anybody else.

Mr. OLIVER. Either the entire plant or the plant the Government constructed there, without question, and I go further, Mr. McKenzie, and I think the authorities are not hard to find on that insistence, that where a party, situated as the Alabama Power Co. was, with the knowledge that they were impliedly charged with, and in this case expressly knew, of the right of the Government to condemn and take the whole property, if it desired, suffered or permitted money of the Government to be expended in the construction of a plant of this kind upon its property, and even selected the site or suffered it to be selected, that the power company could not be heard in condemnation proceedings to set up any claim as to consequential damages to the adjacent property.

Mr. MCKENZIE. If I understand you, and I think I do, under the terms of the contract entered into with the Alabama Power Co., there can be no sale made until three years have elapsed after the declaration of peace.

Mr. OLIVER. Absolutely.

Mr. MCKENZIE. And your contention is that the Government can condemn and can take possession of at least that part of the plant paid for by the Government without waiting for the expiration of the three-year period.

Mr. OLIVER. Absolutely.

Mr. MCKENZIE. And in addition to that, if the plant is so constructed that the Government can not preserve its rights in any other way, then on the basis of economic justice to the Government, they can condemn the whole plant.

Mr. OLIVER. I do not question it, either condemn all or a part. I want, however, to qualify my answer by saying that, of course, I do not think that article 22 of the alleged contract is a binding agreement on the part of the Government.

Mr. KEARNS. Mr. Oliver, unfortunately, I did not hear all of your argument, but following the question of Mr. McKenzie with reference to the condemnation proceedings to be instituted by the Government, do you mean to say that the Government could exercise the right of condemnation at the Warrior plant that belonged entirely to the Alabama Power Co. prior to the time the Government stepped in?

Mr. OLIVER. They could do it if Congress, in its wisdom, declared that that was necessary for the operation of the plant at Muscle Shoals, and the action of Congress, as I read the decisions on the question as to the necessity, would be conclusive.

Mr. KEARNS. I am quite clear in my own mind that the Government would have the right to condemn property of the Alabama Power Co. for its own use, but this would be a makeshift or a makebelieve, and that is the question that is in my mind. Possibly I am wrong, but I would like to hear about that.

Mr. OLIVER. I am very glad you have asked that question.

Mr. KEARNS. Could the Government do something for Mr. Ford that Mr. Ford could not do for himself; that is, condemn property that belongs to the Alabama Power Co. for Mr. Ford? The question in my mind is that it would not be exactly for governmental use and would be whipping the devil around the stump.

Mr. OLIVER. That is a very interesting and important question, and I recognize the pertinency and force of it.

Let me, however, call your attention to this fact before making answer, that this plant at Muscle Shoals is to serve the Government for the next 100 years even under the Ford contract. It is to serve the Government in the event of war and it is to serve the Government in time of peace if the Ford offer before you means anything. So the Government in making a sale to Mr. Ford or a lease to Mr. Ford of this power and of these plants, and in authorizing the taking over of the power plant at Gorgas, which has heretofore been used in connection with nitrate plant No. 2, is doing nothing but providing the necessary power for a governmental purpose, the governmental purpose having been declared in the national defense act of 1916. That is a broad governmental purpose, declared both for war as well as for peace, and so Mr. Ford, if you accept his contract, takes it subject to those national purposes fixed on the plant for the next 100 years or longer.

Mr. KEARNS. And that fact you think would justify or would give the Government a standing in court.

Mr. OLIVER. Yes; and Judge Tyson calls my attention to the fact of the Government's interest in navigation in connection therewith. It is also in connection with that important public use. I do not think there can be any question about it.

Mr. KEARNS. That is my opinion.

Mr. WURZBACH. Mr. Oliver, what do you consider the legal date of the termination of the war under the provisions of this contract?

Mr. OLIVER. The legal date of the termination of the war?

Mr. WURZBACH. Yes; when peace was declared.

Mr. OLIVER. My attention has been called by Mr. McDuffie to the fact that the contract itself provides, probably, that the date of the armistice shall determine that. I have not examined it, however, with that in view. That, as you know, is an open question, and in the absence of an express provision declaring the date of the armistice to be the date, perhaps it might not have been until after the President issued his proclamation of peace.

Mr. WURZBACH. Do you consider that the three-year period provided for in that contract has passed?

Mr. OLIVER. Taking their contention that it takes effect from November, 1918, when it was signed, you understand, and running up to November, 1922, it would have passed.

Mr. WURZBACH. The armistice was signed in November, 1918.

Mr. OLIVER. Yes.

Mr. WURZBACH. Then if that was the legal date the three-year period would have elapsed at this time.

Mr. OLIVER. Yes.

Mr. WURZBACH. Do you think as a lawyer, Mr. Oliver, that assuming that the Chief of Ordnance or an agent of the Government had power to act under this law of July, 1918, or May, 1918——

Mr. OLIVER (interposing). Unquestionably not.

Mr. WURZBACH (continuing). Had any power to sell, do you think that would include the power to provide against a sale or to prohibit a sale during a period of three years?

Mr. OLIVER. Unquestionably not; I do not think anyone will insist that it would. The power to sell would certainly not confer on the agent the power to postpone the right of the Government to sell for three years after peace, and this is what this contract does. In other words, in executing the power to sell, taking it as they view the power conferred by the act of July 9, they have construed it as a power on the agent to postpone the right of the Government to sell for three years after peace, and yet Congress said, "You shall report the sales at the next term of Congress, the terms of sale and the amounts received, etc."

Mr. WURZBACH. That 3-year period having elapsed—it is in one sense not pertinent—but do you think that provision is so materially a part of the entire section of the contract that it would vitiate the entire provisions of the contract?

Mr. OLIVER. The provision I refer to, of course, is a part of the only section which seeks to confer what they claim is an option on them to purchase, and the right on the part of the Government to compel them to buy if it so elects, and, of course, if you take out that part of it, it would certainly vitiate the entire section relating to the sale of this plant.

Mr. WURZBACH. That is what I wanted your opinion on.

Mr. MILLER. May I make a suggestion? The contract itself, Mr. Oliver, between the United States Government and the Alabama Power Co. provides, you will observe, in section 22, "at any time subsequent to three years after the termination of the war," and in the closing paragraph of the contract the words, "termination of the war" are defined.

Mr. OLIVER. Yes.

Mr. MILLER. As the time when the President of the United States shall, by proclamation, declare the war terminated.

Mr. OLIVER. That, then, would not be in November, 1918. When was that proclamation issued? I think it was last November, and, of course, it would be three years from that time. In other words, the Government itself, under this contract, if valid, would be postponed in its right to sell for three years from November, 1921, and the Alabama can use it and hold possession of it during that time.

Mr. WURZBACH. If that 3-year period has not elapsed, do you think that the Government would have the right to sell this property, because the option of the Alabama Power Co. to buy only begins at the termination of the 3-year period?

Mr. OLIVER. Not if the contract is valid, unless needed for a national purpose. So unfair, unreasonable, and overreaching is this contract in favor of the Alabama Power Co. that while it postpones the right of the Government to sell until three years have elapsed after the proclamation of peace, the Alabama Power Co. reserved to itself the right to call on the Government to sell to them at any time the company elected to buy, and did not even fix any limitation when the company could exercise such right. It might be four or five years after peace, you understand.

Mr. WURZBACH. But before the lapse of the three-year period after peace has been declared do you not think under the terms of this contract the Government would have a right to sell this property to anyone?

Mr. OLIVER. I do not think the contract is valid, for the reasons stated, and I think that the reasons pointed out invalidate that contract beyond question, but if you assume that the contract is valid and that section 22 is a valid agreement, then the Government would be postponed in its right to sell until three years have elapsed from last November, unless Congress determines it should be acquired for national use.

Mr. WURZBACH. But I think you stated a while ago that that provision attempting to prevent the Government from selling during the three-year period is an invalid provision against public policy.

Mr. OLIVER. Yes. I think the whole clause is invalid, and my answer was based on a very violent assumption, and that was that we would assume that this was valid. I think that is a false assumption.

Mr. WURZBACH. And according to that contract the Alabama Power Co. has no right to purchase until after the lapse of the three-year period. Is not that true?

Mr. OLIVER. No. Mr. Miller evidently had this section in mind when he called attention to the fact that it appeared to him to be overreaching and grossly unfair to the Government. And why? The Alabama Power Co. sets up a contract whereby it says that the contract has postponed the right of the Government to sell this plant to anybody until three years elapse from the date of the President's proclamation of peace; in other words, three years from last November, as we now understand it.

The CHAIRMAN. In thinking it over I think the proclamation was issued in October.

Mr. OLIVER. Then I will correct that. I thank you very much, Mr. Chairman. Anyhow, three years from the date of the proclamation, and yet in that same

clause postponing the Government's right to sell to anyone, the Alabama Power Co. reserves the right to use that plant, and further reserves the right to require the Government before the expiration of that three years to sell it to them.

You see the difference in the rights—one postpones the Government's right to sell at all, but gives the power company the right to purchase at once, and the reason is very apparent. They say, "We will use it, and if it is profitable to use it, then, under this contract, article 22, we will use it and amortize the amount that we may be willing to pay hereafter for it with what the Government pays us in excessive charges. If, however, we find it to our advantage to buy we can call on the Government at any time to sell, and they must sell." They get the option and the Government gets nothing, and yet they call that a fair and just contract.

Mr. FIELDS. Mr. Oliver, granting for argument's sake that the contract of the Alabama Power Co. is valid.

Mr. OLIVER. Granting that it is valid is very violent.

Mr. FIELDS. Yes; granting for argument's sake that it is valid and considering in connection with that the fact that the declaration of peace was issued by the President, as the chairman has called attention to, last October, practically three years after the armistice and practically three years after the Government ceased to use this property, that gives the Alabama Power Co. the right to use it six years lacking one month.

Mr. OLIVER. Yes.

Mr. FIELDS. During which time the Government can not sell it and during which time the value of the property may depreciate and the value of the earnings of the Alabama Power Co. upon the use of the property may increase to such an extent that those earnings will pay the Government's claim on the property.

Mr. OLIVER. Certainly. That was their purpose, of course. There is no question in the world about that.

Mr. QUIN. Mr. Oliver, taking the national defense act of 1916, if this contract bears the date of the 1st of December, 1917, and practically all the work was done and both parties lived up to the obligations of that understanding, is not this contract void?

Mr. OLIVER. Not for that reason, Mr. Quin. I heard your questions yesterday seeking to elicit when, in the opinion of the attorney of the Alabama Power Co., the contract became effective. I am of the opinion that he answered correctly that in view of the letters and other memoranda introduced, and assuming they are genuine and that it is all there is on the subject, perhaps, it would be effective, if effective at all, from the date when it was actually signed, for this reason: Ordinarily, the rule is that where there are acts and agreements that rest in parole or by letter or by mutual offers and counter offers anteceding a written contract, the signing of the written contract, if it be dated back to the time when those negotiations commenced, becomes effective from that date; but if there happen to be any facts in connection with these intermediate agreements showing the intention of the parties to postpone the time when the contract was to be signed, for a reason, whether it be good or bad, then it would not take effect back in contravention of the plain intention of the parties; and one memorandum that Mr. Martin introduced, bearing date, as I recall, in December, 1917, stated that in view of the fact that there is now no power existing on the part of any officer of the Government to sell this property, no contract in reference to these matters will now be entered into, and assuming that that was a proper paper, I do not think it would date back to December, 1917, so as to cut out a right they were seeking to broaden by the postponement of its execution. Do I make myself clear on that?

Mr. QUIN. Yes; I understand your position. Then, basing the contention, as both the president of the Alabama Power Co. and their counsel, Mr. Dent, did before this committee, upon the act of May and the act of July, 1918, and with the language of those two acts and of this contract construed together, is it not a fact that this contract is not only voidable but void?

Mr. OLIVER. Absolutely void.

Mr. QUIN. With that language requiring, as it does, action on the part of the agent and that agent specified as the head of the department, who was the Secretary of War in this case, was it not?

Mr. OLIVER. Yes.

Mr. QUIN (continuing). The contract would be bound to be a nullity.

Mr. OLIVER. I do not think there is any question about that. I, perhaps, answered that too hastily. There is a principle of law that where an agent, without any authority makes a sale for his principal, exceeding his authority, and the principal when it is brought to his attention, expressly ratifies it, then the party entering into the contract with the agent is estopped from denying to the principal the right to affirm. So I answer with that qualification, but that would be purely a reservation for the benefit of the principal which, in this case, would be Congress.

Mr. QUIN. The fact that there was an interlocking interest of the Alabama Power Co. with the Government's power plant, making it a partner in the operation for the future, under the language of the act, would that be void?

Mr. OLIVER. I do not think there is any question but what it would not be available to the Alabama Power Co.

I have no doubt but what Congress has a right to condemn that plant and that these fancied damages that the gentleman has alluded to will appear as myths. There is nothing to them. You can not suffer the Government to expend $5,000,000 on your property, at a place you consented and permitted it to be spent, and then come in and threaten the Government in the event it institutes condemnation proceedings so as to acquire and utilize that property in the future as it has been utilized in the past for governmental purposes. that you will claim, large, consequential damages. There could not be any principle of law sounder than that the Alabama Power Co. will be limited to very small consequential damages under those circumstances.

Mr. FISHER. Do I understand that it is your suggestion that the proper procedure would be that if the Congress should determine to accept another offer than the Alabama Power Co., that the Congress should pass a mandatory provision or a mandatory law directing that condemnation proceedings be instituted to get the title for the Government to the property upon which the Gorgas plant is built?

Mr. OLIVER. Oh, absolutely.

Mr. FISHER. Separating the plant as built after the Government entered into the contract with the Alabama Power Co. from the plant which was originally there.

Mr. OLIVER. You have the description here and you can get that very clearly.

Mr. FISHER. Have you any idea what those condemnation proceedings would cost?

Mr. OLIVER. As I said a few moments ago, I think Congress would be perfectly justified in appropriating a reasonable sum. Of course, I know you would fix a fair and just amount.

Mr. FISHER. You mean at the same time they passed a law directing the condemnation they would pass an appropriation limiting the amount of money that could be paid.

Mr. OLIVER. If you desired you could do that at that time, but if the assessment exceeded the appropriation it would afterwards be provided.

Mr. WRIGHT. Taking the situation as we find it, suppose the Government should now convey to somebody perhaps all of its right, title, and interest in the Gorgas plant and transmission line, and that the purchaser was subrogated to all the rights of the Government in the premises; what kind of a title do you think the purchaser would get?

Mr. OLIVER. I question whether or not that would be acceptable to any purchaser. I do not think any purchaser would take it that way.

Mr. WRIGHT. As a matter of law, I wanted to get your opinion as to what interest the purchaser would get.

Mr. OLIVER. I would not like to answer that offhand. I am afraid it might embarrass him in the proper assertion of a perfectly proper and legal right and largely postpone the enjoyment of the property, which is most essential to the economical operation of a plant to be used for an important governmental purpose, if you elect to require the production of fertilizer. That is my opinion.

Mr. STOLL. Mr. Oliver, the acts of May 10 and July 9, to which you referred, gave the executive heads of the departments the right to sell certain real estate, and so on. Did they give them the right to option property, thereby giving one person a preferred right for a period of years to buy?

Mr. OLIVER. I do not think anyone will insist they do.

Mr. STOLL. This contract of the Alabama Power Co. is not for a sale, but it is for an option on their part to buy.

Mr. OLIVER. Absolutely.

Mr. STOLL. There is no provision in these acts whereby any party would be given a preferred right to buy as they now claim under this contract.

Mr. OLIVER. I think that statement of facts is conclusive as to the illegality of that clause of the contract.

May I make one further statement? There has been some adversion to an act known as the Dent Act, passed in 1919. It is not necessary to discuss that more than to call the committee's attention to it, I am sure. I think most of the members of the committee now were on the committee at the time that act was passed, and you are familiar with the fact that the purpose of that act was simply to authorize the adjustment and settlement of claims against the Government, and you very wisely fixed a limitation on the time when they could be adjusted, in that you placed a proviso in the act that the Secretary of War or the heads of other departments on whom you conferred this authority to adjust and settle should make a full report of all the claims settled and the terms of the same to the next session of Congress. It has absolutely no effect in a matter of this kind.

The CHAIRMAN. As I understand it, the law has expired by limitation.

Mr. OLIVER. Absolutely; the purpose of the law has been fully met and complied with, and it is not applicable.

The CHAIRMAN. We are very much obliged to you.

Mr. OLIVER. I appreciate very much your courtesy, Mr. Chairman.

ADDITIONAL STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO.

The CHAIRMAN. Mr. Martin, would you desire to go ahead with the proposition of the Alabama Power Co. at this time?

Mr. MARTIN. I am at your service, Mr. Chairman.

The CHAIRMAN. The committee would be very glad to hear what you have to say about the purchase or delivery of this property to you under the terms of your agreement, and I suggest, in the first place, that your letter to the Secretary of War, and the Secretary of War's letter to the Speaker of the House transmitting your offer be inserted in the record at this point and that they be read by the clerk of the committee.

Mr. MARTIN. May I ask, Mr. Chairman, before you leave the other branch of the question, that Mr. Dent might be heard by the committee on one or two questions which have been presented by Mr. Oliver? Mr. Dent, who is acting as our counsel, would like to have the privilege later on to appear and make a statement in reply to Mr. Oliver.

The CHAIRMAN. Is Mr. Dent present?

Mr. MARTIN. He is not present at the moment.

The CHAIRMAN. When do you think it will be possible for him to proceed? I want to prevent the two propositions being mixed. We ought to close the hearings on one entirely before we take up the other.

Mr. MARTIN. I will say this: That Mr. Dent is not here now, and he would have to read Mr. Oliver's remarks before he can answer. He will not be able to get them until this afternoon. If the committee wishes to hear him in advance of my statement, he will not be able to make his reply until to-morrow morning.

The CHAIRMAN. The committee will hear Mr. Dent to-morrow morning, and his statement will be placed in the printed record immediately following the statement of Mr. Oliver.

In the meantime we will be glad to hear you on the proposition submitted by the Alabama Power Co., and I will ask the clerk of the committee to read the letter of transmittal of the Secretary of War and also your offer made to the Secretary of War.

(The clerk of the committee read as follows:)

WAR DEPARTMENT,
Washington, February 21, 1922.

DEAR MR. SPEAKER: I forward herewith an offer, which I think worthy of consideration, made by the Alabama Power Co., proposing to complete the dam at Muscle Shoals and to administer the Government's property at that point, which, I think, should be referred to the committee having jurisdiction over this subject. This offer is accompanied by a letter of explanation.

My comments on this offer are as follows:

1. The company will take out a license under the Federal water power act to complete the dam, locks, and power house, at its own expense, with initial installation of approximately 240,000 horsepower, subsequent installation to be made as required by the Federal waterpower act to meet market demands. This has the advantage of relieving the Government of all further expenditures in connection with completing these structures.

2. The company offers to furnish the Government, or anyone it may designate, with free power in the amount of 100,000 secondary horsepower for the production of fertilizer and munitions of war and research in connection therewith; and if for any reason this use of the power is discontinued the company will purchase same. This feature of the offer has the advantage of providing the Government a return on the $17,000,000 it now has invested in the water-power project.

3. The Government has an interest in the Warrior extension of the steam plant of the power company and certain other facilities, and it owns the steam plant at nitrate plant No. 2, all of which the company offers to purchase for $5,000,000, less an amount to be agreed on to cover costs of locks and navigation structures at the Wilson Dam, which would be approximately $2,500,000, thus realizing a substantial sum on the Government's war-time investment in these steam-plant facilities and at the same time placing them in the public service.

4. It is important here to note that the effect of this offer is to leave the Government in ownership of its two nitrate plants in the Muscle Shoals district, together with the Waco quarry, representing a war-time investment of some $75,000,000. They may be retained or they may be disposed of by lease, or otherwise, for the manufacture of nitrates, for munitions of war, or fertilizer.

5. The power company offers to operate and maintain the dam, power plant, and gates. There is a distinct advantage to the Government in this part of the offer. In the period of 50 years there may be occasion for substantial repairs and maintenance to the dam and gates as well as the power plant.

6. By the terms of this offer the Wilson Dam property will be transferred to the licensee, who will complete the construction. The locks and navigation structures, when completed, are to be conveyed to the Government in fee. This feature of the offer has the advantage that it brings the entire property, represented by the Wilson Dam project, under local taxation laws.

7. The offer contains the further provision, based on section 16 of the Federal water-power act, for taking over and operating the water-power project by the United States, whenever the safety of the United States demands, for the manufacture of nitrates, explosives, or munitions of war, or for any other purposes involving the safety of the United States. This broad provision of the act is of special importance to the United States in view of the location of the nitrate plants at this community.

8. It is proposed by the power company to develop this project under the Federal water-power act, which limits the license to a 50-year term. There is reserved, by section 14 of the act, the right to recapture by the Government, at the end of that period, and if not so taken over by the Government, then, the State and municipalities have preference over others. In this important respect the offer conforms to our national policy.

9. The company agrees to begin construction promptly and to complete the same within a reasonable time. The construction must be begun and completed within the time prescribed in the license. If not begun, the license may be terminated upon order of the water power commission; and, if not completed, there is ample provision for protecting the rights of the Government in the situation. In addition, however, it is in the province of the Federal Power Commission to require such assurances and guaranties as may be necessary as to the financial ability of the licensee to complete its undertaking.

10. The Alabama Power Co. is a public utility. By the terms of the Federal water-power act, its rates, services, and security issues, are regulated by local authority, and if none exists, by the Federal Power Commission. These regulatory laws all provide for service to everyone without discrimination.

11. The Acting Judge Advocate General has expressed the opinion that the option claimed by the Air Nitrates Corporation, under its contract, is not a lawful option. If valid, it is an option on the plant as an entirety. It is believed that nothing in the option prevents substitutions in parts of the plant believed by the Government to be desirable. This offer substitutes power in amounts sufficient for the efficient operation of the plant for a plant to

produce this power and no injury is done to the nitrate plant as a whole. Moreover, the Air Nitrates Corporation option arises only in case the United States determines to dispose of the plant as an entirety. Accordingly, even if the option is valid, it would seem not to intetrfere with the acceptance of this offer.

12. This offer makes no provision for Dam No. 3. To provide for the local requirements there is probably no necessity for the construction of this dam at this time; but, in case the local demand and the requirements of navigation develop, there would be no difficulty in providing for the financing of Dam No. 3 on reasonably fair terms.

Yours, very truly,

JOHN W. WEEKS,
Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

ALABAMA POWER CO.,
Birmingham, Ala., February 15, 1922.

Hon. JOHN W. WEEKS,
Secretary of War, Washington, D. C.

SIR: This company offers to carry out the following plan by which the Wilson Dam at Muscle Shoals may be completed and the nitrate problem of the Government in connection therewith may be simplified without further advances or expenditures by the United States.

1. To take out a license under the Federal water power act under which we will complete the construction of the dam, locks, and powerhouse at Muscle Shoals, known as Wilson Dam, or Dam No. 2, at our own expense, with initial installation to be made in accordance with the Federal water power act as may be necessary to meet the market demands.

2. To furnish free to the Government, or anyone it may designate, from the hydropower plant 100,000 horsepower, as required for the production of fertilizers and munitions of war and for research in connection therewith; and if, due to changes in the art, this use of such 100,000 horsepower is discontinued by the Government, the Alabama Power Co. to purchase and pay for the same in accordance with a schedule to be set forth in the license. This power to be the second 100,000 horsepower at any time available from the normal flow of the river.

3. To purchase the Government's interest in the Warrior extension of the steam plant of Alabama Power Co. and facilities, the Warrior and Sheffield substations, the transmission line from Warrior to Sheffield, and the steam plant at nitrate plant No. 2, together with the necessary rights of way, lands, and housing facilities, and to pay therefor in five equal installments and the sum of $5,000,000, less an amount to be agreed on to cover the cost of locks and navigation structures at Wilson Dam, the first payment to be made when license is granted, the remaining payments to be made in four equal annual instalments with interest at 5 per cent, with the right to anticipate any part or all of same.

4. To operate and maintain the power plant, dam, and gates, the Government to operate and maintain the locks, for which the power company will supply the necessary power without expense to the Government.

5. The Government to transfer to the licensee the Wilson Dam property represented by its investment and commitments to date, free of liabilities and unincumbered, including the construction plant. The locks and navigation structures to be conveyed to the Government in fee on completion of construction.

6. Whenever the safety of the United States demands the United States shall have the right, as more fully provided in the Federal water power act, to take over and operate the project covered by the license for the purpose of manufacturing nitrates, explosives, or munitions of war, or for any other purpose involving the safety of the United States, for such length of time as may appear to the President necessary for such purposes.

7. The project covered by the license to be subject to recapture by the Government at the end of 50 years under the terms of the Federal water power act.

8. The licensee will agree to begin the construction promptly upon the enactment of the necessary legislation and granting of license and to complete the same within a reasonable time thereafter.

To facilitate the carrying out of this plan, we may find it necessary to organize a new company for the purpose, in which case, however, the obligations of this offer shall be binding upon this company in all respects as if it were the licensee.

Very respectfully,

ALABAMA POWER CO.,
By THOS. W. MARTIN, *President.*

ALABAMA POWER CO.,
Birmingham, Ala., February 15, 1922.

Hon. JOHN W. WEEKS,
Secretary of War, Washington, D. C.

SIR: In accordance with the offer which we have to-day submitted to you with reference to completing the Wilson Dam at Muscle Shoals, we beg to make the following statement:

For many years the Alabama Power Co. has been serving electricity to the industries and the public in Alabama. It is an Alabama corporation, having several thousand stockholders in Alabama. It has now more than 17,000 customers and serves more than 50 municipalities. It has more than 1,500 miles of transmission lines, an installed electric-generating capacity of 175,000 horsepower, and is engaged in constructing a new hydroelectric plant on the Coosa River of 110,000-horsepower capacity under a 50-year license granted by the Federal Power Commission. Its facilities are now being used to supplement the power supply in Tennessee, Georgia, and South Carolina, and even as far away as North Carolina, 600 miles distant, and can be used in even more distant localities.

For many years this company has been identified with the Muscle Shoals situation. For several years before the war it had owned the site of the Wilson Dam, and at the outbreak of the war it was actually proceeding with plans for a power development at this point. These plans were made with the active cooperation of the engineers of the War Department, and their approval appears in House Document No. 20, Sixty-third Congress, second session, and House Document No. 1264, Sixty-fourth Congress, first session.

After this country entered the war the Government desired the site for war purposes. We thereupon donated the site to the Government and transferred to it for $1 titles and rights in connection with which we had already spent just under $500,000.

We still own dam site No. 3 and certain lands in connection therewith.

The Government being also then in need of power beyond our available capacity, and time being of the first importance, we in like manner turned over to the Government, upon its request, the use of foundations and underwater structures then in reserve for our own use and enabled the Government to build thereon a 30,000-kilowatt extension to our Warrior River steam plant to be operated in conjunction therewith, and at the same time we placed a right of way owned by the company at the disposal of the Government for building a transmission line from Warrior to Muscle Shoals, a distance of some 90 miles. This enabled the Government to quickly secure the large amount of power required for constructing and operating the nitrate plants at Muscle Shoals. An agreement was signed between the Government and the company in November, 1918, binding the company to purchase this property from the Government after the termination of the war at a fair value.

When, in April, 1921, the War Department inquired concerning the feasibility of completing the Muscle Shoals development, we expressed the opinion that the project was an economical and profitable undertaking and promised that when the Government determined to complete it for commercial purposes the Government might rely upon the cooperation of this company. Recent discussions in Congress indicate that the Government is now prepared to devote this power to industrial uses, and it is, therefore, appropriate for this company now to offer its suggestions.

In formulating our plan we have sought to meet the requirements of the Government—first, in the desire to produce cheap fertilizers; second, to have nitrates available in time of war; third, to contribute to the industrial development of the region both by bringing in new industries and opening up navigation on the Tennessee River; and, finally, to complete the project without further expense to the Government.

Financial conditions have so far improved that we are now able to offer to complete the Wilson Dam and power project without cost to the Government, except for its locks.

We are assured by a number of important industrial enterprises that if the power from this development becomes available to the public they will establish new plants and factories in this locality. This, with the rapid growth of industries in the region which may be economically served—a territory larger than New England—is such that we are confident the entire power output will be promptly absorbed. If the Muscle Shoals power can be made available for everybody, we believe that not only will a number of new industries be established at or near Muscle Shoals but the industrial development of Alabama, Tennessee, Georgia, North and South Carolina, and, indeed, of the entire South, will be promoted. Hence our willingness to assume the large responsibilities involved in our offer.

The Government has invested more than $70,000,000 in the two nitrate plants and the lime quarry, and it appears that one or both of these plants are essential for the production of nitrates for war purposes and useful for fertilizer production. Our proposal leaves the Government in full title and possession of these plants and the quarry, to give it 100,000 horsepower and from two to five million dollars in cash for the operation thereof and for carrying on experiments in connection therewith. The Government will then be in position to turn over the two plants, with power and money for the operation thereof, to anyone capable of meeting the requirements of the Government and the farmers for nitrates and fertilizers, or the Government may retain the properties and itself carry on such experiments and manufactures as it sees fit. The Government can dispose of the plants in perpetuity for a long period of years or for a short period of years, and it should be able, with the free use of modern plants, no taxes, no power charges, and even with the free use of working capital, to attract the best skill and talent to be found.

The art of producing nitrates is still in its infancy and may so develop that in a few years these plants and this power will not be needed for producing either nitrates for war purposes or fertilizers. Our plan provides that in case the use of 100,000 horsepower is discontinued by the Government we will purchase that power from the Government and the proceeds will then be available for any use desired by the Government, including the amortization of its present investment in this situation.

We propose to take a license under the Federal water power act. This act provides for a 50-year license with the right of the Government to recapture the property at the end of the license period. It requires the licensee to operate and maintain the power plant, dam, and gates at its own expense, to make all necessary renewals and replacements, and it permits the Government to operate and maintain the locks, power to be furnished free for this purpose by the licensee. Of special importance in this situation is the requirement that the licensee shall contribute to the cost of improvements in the headwaters of the river made either by the Government or by another licensee. This insures our cooperation in opening the upper reaches of the river to navigation and improvement.

This great project should be completed and at the earliest possible date coordinated with the power demands of the very extensive territory covering seven States within the reach of power from this source. The maximum value can be drawn from these Tennessee River possibilities only through their coordination with the power and reservoir opportunities on other rivers in Alabama and adjacent States now in process of progressive development in the different watersheds. Such is the conclusion in the report entitled "The power situation during the war," submitted to the Secretary of War in 1921, through the Chief of Engineers, from which we quote as follows:

"150. It therefore appears that a broad and well-founded judgment would dictate that the Muscle Shoals development should be interconnected for exchange of power with the existing power systems of the Southern States, and that this interconnection and exchange should be arranged for without delay, so that future construction, both at Muscle Shoals and elsewhere, can be directed for the production of plants which will supplement each other for economy of construction and operation."

Very respectfully,

ALABAMA POWER CO.,
By THOS. W. MARTIN. *President.*

(Thereupon the committee took a recess until 2.30 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2.30 o'clock p. m.

The CHAIRMAN. The committee will please come to order.

Mr. OLIVER. Mr. Chairman, I was inaccurate in one statement this morning as to the law, and I desire to ask permission to withdraw it. It was a statement which I rather hurriedly made, I think, in response to a question as to fixing a limitation on the amount in the event condemnation proceedings were begun. I do not think it would be proper to fix a limitation, and I simply want to withdraw that statement.

The CHAIRMAN. If there is no objection, Mr. Oliver, you may withdraw that.

Mr. OLIVER. Thank you.

ADDITIONAL STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT OF THE ALABAMA POWER CO.—Resumed.

The CHAIRMAN. Mr. Martin, we will be very glad to hear such explanation of your offer made through the Secretary of War as you desire to make, and you may proceed in your own way and state the matter as you think best.

Mr. MARTIN. Thank you, Mr. Chairman. I stated to the committee, Mr. Chairman, a day or two ago that in 1912 Mr. James Mitchell arranged to take over certain undeveloped power situations in Alabama which at that time were owned by citizens of that State principally.

Among those situations was the Muscle Shoals undeveloped power. There was in existence at that time a company known as the Muscle Shoals Hydroelectric Power Co. This company was organized in 1906 by citizens of Alabama, and purchased from time to time properties along the Tennessee River, with the view of their ultimate development. Among those interested in that company prior to 1912 was Mr. J. W. Worthington, who has appeared before the committee. Mr. Worthington sold his interests, along with the other stockholders, to Mr. Mitchell and associates, but continued as an officer of that company until his resignation in February, 1920. Meanwhile he had been connected with the Alabama Power Co. His direct connection with that company as an officer of the company was terminated some time in the fall of 1915, but he continued as president of the Muscle Shoals Co. until, as I stated, February, 1920.

The CHAIRMAN. You say he continued as president of the Muscle Shoals company?

Mr. MARTIN. Yes, sir; until February, 1920.

The CHAIRMAN. What was the Muscle Shoals company? Was it a separate organization?

Mr. MARTIN. Yes, sir. The Muscle Shoals Hydroelectric Power Co. was a separate and distinct corporation, which corporation acquired these undeveloped sites on the Tennessee River. The stock of that corporation was acquired by Mr. Mitchell and associates in 1912, but the Muscle Shoals Hydroelectric Power Co. continued as a separate corporation, having its own organization and officers, and so it is to-day a distinct corporation.

Now that corporation had its activities, but they were limited to some plan of development of the power at the Muscle Shoals, and as president of that company Mr. Worthington remained in charge of its affairs, or practically in charge of its affairs, until his resignation in February, 1920.

The plan of development of the Muscle Shoals situation was somewhat along this line: As has been explained to you, the Tennessee River is a very flashy stream. The water flow varies from a minimum of 7,000 cubic feet per second at certain seasons to some four or five hundred thousands cubic feet per second at extreme high water. The result of that was to cause those interested in this development long ago to feel that its true economic development lay along some lines of coordinating this Muscle Shoals development with some large storage development, a development which would store the flood waters in some other watershed, to be released in time of the Tennessee River low water, supplementing, of course, that low water.

Prior to 1912 Mr. Worthington and his several associates not only became interested in the Muscle Shoals Hydro Electric Power Co., but also became interested in another company known as the Birmingham, Montgomery & Gulf Power Co., a corporation organized under the laws of Alabama, and this Birmingham, Montgomery & Gulf Power Co. acquired a site on the Tallapoosa

River in Alabama known as Cherokee Bluffs. Now, the Tallapoosa River, of course, is in a different watershed from the Tennessee River. The Cherokee Bluffs site and certain reservoir lands were acquired with the view of developing at the Cherokee Bluffs site a great storage project, and the efforts of those interested in both developments then was to create this storage development on the Talapoosa River, to build dams on the Tennessee River, and to connect these two developments by transmission lines, the Tallapoosa River to supplement the development on the Tennessee River.

This Cherokee Bluffs reservoir site, if developed on this theory, would result in a storage reservoir of a capacity of approximately 50,000,000,000 cubic feet of water. That was the capacity, 50,000,000,000 cubic feet of water, a very large storage project.

There was a smaller project along lines of storage on what was known as the Little River in Alabama, capable of storing some approximately 5,000,000,000 cubic feet of water, and from time to time this Muscle Shoals situation was expanded to further include the storage which might be made at the Little River, but the principal theory or plan was to connect the Tallapoosa River and Tennessee River developments in this manner.

Now, this Birmingham, Montgomery & Gulf Power Co. was owned by more or less the same group of individuals who were interested in the Muscle Shoals Hydro Electric Power Co. in 1912, and Mr. James Mitchell and associates took over this Birmingham Co., along with the Muscle Shoals situation, with the view of its development along some line.

A great deal of work was done in the succeeding two years on a plan looking to the development of the Muscle Shoals power on the lines I have stated.

The CHAIRMAN. Excuse me just one moment. Did these two companies that you speak of become subsidiary companies to the Alabama Power Co.?

Mr. MARTIN. In effect, Mr. Chairman, that was true; yes.

There was a great deal of work done looking to the development of the Muscle Shoals situation in 1912 and 1913, and this work culminated in a proposal to the Government for the development of the sites 2 and 3 on the Tennessee River, that proposal being dated December 10, 1913, and supplemented by a letter of the Muscle Shoals Hydro Electric Power Co. of January 1, 1914.

Of course, we all understood that any developments on the Tennessee River, being a navigable stream, had to be authorized in due course by the Congress, and hence the whole plan of working this situation out necessarily involved a proposal to the Government.

The CHAIRMAN. And these propositions were all made to the Government before the war had even started in Europe?

Mr. MARTIN. Yes, sir. These proposals were made, as I have stated, in December, 1913, supplemented by a second letter of January 1, 1914, which I will ask leave to file in the record.

The CHAIRMAN. You may file them.

Mr. MARTIN. Now, that proposal was considered by the engineers of the United States for some months, and their consideration culminated in a report from the Chief of Engineers, Gen. Dan C. Kingman, to Hon. S. M. Sparkman, chairman of the Committee on Rivers and Harbors, House of Representatives, under date of May 18, 1914; and this report, together with our proposal, is set forth in Document No. 20, Sixty-third Congress, second session, a document printed for the use of the Committee on Rivers and Harbors, House of Representatives.

The CHAIRMAN. Who was at the head of the Corps of Engineers at that time?

Mr. MARTIN. Gen. Dan C. Kingman.

The CHAIRMAN. I remember almost all the Chiefs of Engineers since 1900, but I can not remember Gen. Kingman.

Mr. FIELDS. I remember him very well.

The CHAIRMAN. You say you remember him, Mr. Fields?

Mr. FIELDS. Yes, sir; he presided at a meeting of the engineers in my district on the question of the improvement of the Big Sandy River.

Mr. MARTIN. This plan, which was suggested in our proposal of coordinating these developments on the Tennessee River and the Tallapoosa River was approved and highly recommended, as you will see on an examination of these reports of the district engineer to the Chief of Engineers, and I would like to quote just a sentence, if I may take the liberty, from that report, and then I will pass on to the comment I wish to make.

In Gen. Kingman's letter he stated:

"The Board of Engineers for Rivers and Harbors has carefully considered this plan and is in general accord with the views and recommendations of the special board, though believing that a due regard of public interest requires that some equitable provision should be made whereby the United States may terminate the lease at any time after the end of 50 years in case it should become apparent that such action is desirable."

I just wanted to read that comment in passing, and then there is a further comment upon the proposal.

The proposal report and letters referred to follow:

[Rivers and Harbors Document No. 20. Sixty-third Congress, second session.]

TENNESSEE RIVER BETWEEN BROWNS ISLAND AND THE RAILROAD BRIDGE BELOW THE CITY OF FLORENCE, ALA. (MUSCLE SHOALS).

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON TENNESSEE RIVER BETWEEN BROWNS ISLAND AND THE RAILROAD BRIDGE BELOW THE CITY OF FLORENCE, ALA.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, May 18, 1914.

SIR: Referring to your letter dated March 2, 1912, inclosing a copy of a resolution dated February 24, 1912, by the Committee on Rivers and Harbors of the House of Representatives, requesting the Board of Engineers for Rivers and Harbors to review all previous reports on survey of the Tennessee River in the State of Alabama from Browns Island to the railroad bridge below the city of Florence, Ala., and to submit certain additional information and estimates relative to the coordination of proposed improvements for navigation and water power at this locality, with a view to providing for an immediate slack-water navigation of 6 feet, capable of later deepening to 9 feet, I have the honor to inclose herewith a copy of the report of the board, dated May 5, 1914, in response thereto, together with a copy of a report dated February 23, 1914, by a special board of engineers created for the purpose of making the necessary local investigations.

2. Bids were invited by the special board for cooperation by water-power interests in the proposed development. Two bids were received, that of the Muscle Shoals Hydro-Electric Power Co., being deemed the more advantageous to the United States. The cost of providing 6-foot navigation, under a plan contemplating a water-power development, satisfactory to this company is estimated by the special board at $18,701,000. Of this approximately $8,575,000 may properly represent the value of the proposed improvement to navigation, the remainder being chargeable to power development, and to be reimbursed to the United States with interest under a definite schedule of payments, the first to be a cash payment of $3,000,000 upon the completion of the structures at site No. 2, to be followed by 99 annual cash payments in amounts which, with the first payment, will return the entire part of the cost chargeable to power development with compound interest at 3 per cent. In addition, the company proposes to pay each year an amount equivalent to 35 cents per horsepower of installed capacity, beginning as soon as this exceeds 200,000 hoursepower, and in any case not later than 20 years after first power is developed. The lease period proposed is 100 years.

3. The Board of Engineers for Rivers and Harbors has carefully considered this plan and is in general accord with the views and recommendations of the special board, though believing that a due regard of public interests requires that some equitable provision should be made whereby the United States may terminate the lease at any time after the end of 50 years in case it should become apparent that such action is desirable. With this provision the board is of opinion that it is advisable for the United States to adopt the project outlined by the special board for combined navigation improvement and power development on the Tennessee River at Muscle Shoals, Ala., in cooperation with the Muscle Shoals Hydro-Electric Power Co., at a total estimated cost of $18,701,000, under the conditions specified by the special board. The first appropriation should provide at least $1,000,000 in cash and contract authorization for the balance, with a view to completion of the work in five years. In case Congress does not adopt the project at once, the board recommends an appropriation of $150,000 to provide for completion of the detailed surveys,

foundation borings, and preparation of plans, so that there need be no unnecessary delay in active prosecution of the work whenever it is authorized.

4. After due consideration of the above-mentioned reports, I concur with the views of the special board and the Board of Engineers for Rivers and Harbors. Attention is particularly invited to the general comments made by the latter board in the final paragraph of its report relative to the economic questions involved in the financing of joint navigation and water-power developments, of which the one herein proposed is the first to be recommended on a very large scale.

DAN C. KINGMAN,
Chief of Engineers, United States Army.

Hon. S. M. SPARKMAN,
Chairman Committee on Rivers and Harbors,
House of Representatives.

MUSCLE SHOALS HYDRO-ELECTRIC POWER CO.,
Nashville, Tenn., December 10, 1913.

Col. W. C. Langfitt and Members of the United States Engineer Board on the Improvement of the Muscle Shoals Section of the Tennessee River, United States Engineer Office, Nashville, Tenn.

SIRS: The Muscle Shoals Hydro-Electric Power Co., with further engineering studies and investigations of the joint navigation-power improvement of the Muscle Shoals section of the Tennessee River, conducted during the past six months of extended time granted by your board, by your circular dated 25th of June, 1913, is now pleased and prepared to submit to your board the following suggestions and proposals:

Of the three methods named in your circular as acceptable to you for receiving bids, the Muscle Shoals Hydro-Electric Power Co. selects and proposed upon a combination of the two first methods.

The following bid of this company is based upon a lease of 100 years, and for the following reasons:

1. The Muscle Shoals Hydro-Electric Power Co., in the light of its own experience, feels that a project of this magnitude, involving such large financial negotiations, can not be financed on any successful basis with a period shorter than 100 years.

2. Hydroelectric, more than any other class of industrial investments, must bear a trying interest burden over a longer nonrevenue initial period of construction.

3. The hazards of a hydroelectric investment are greater than in any other class of investments.

4. In proportion as the lease period is shortened, in like proportion bond issues on such development are with greater difficulty and more expensively negotiated.

5. Electrochemical and electrometallurgical operations, upon which power developed at Muscle Shoals must rely for consumption, require and must secure power at extremely low rates covered by long-period contracts.

In the final preparation of this proposal the Muscle Shoals Co. has, at its expense, added to the earlier engineering investigations and reports covering a period of six years prior to your circular of June 25, 1913, further studies, surveys, soundings, and estimates, and transmits the result thereof to your board in the form of maps and drawings, tying in its work with the surveys of the Corps of Engineers, United States Army, wherever practicable. The result of the engineering studies and investigations by the Muscle Shoals Co. during the past six months has confirmed the conclusion suggested to your board on June 24, 1913, that the most feasible and economical plan for the joint improvement of navigation and development of power at Muscle Shoals is with two power dams instead of three, the lower dam being located on the site designated by your board as "No. 2" and the upper dam on the site designated by your board as "No. 4"; the lower dam site, No. 2, to have a crest elevation of 500, with the tail-water at 400.5 the upper dam, at site No. 4, to have an elevation of 540 for the top of the movable crest and 528 for the top of the fixed portion of the dam.

Our engineering studies and investigations, now running over six years, and especially the investigations we have made during the past six months, support the estimate which we have made that the cost of lands, dams, locks, power-house substructures, and miscellaneous and engineering expenses, in connection with these items, together with a contingent and interest fund of $1,000,000, will be $17,349,100. Our plans are based on the gravity dam, sections, adopted by your board for Dams Nos. 2 and 4, and upon unit prices, which we believe, in the light of our recent experience, are more than ample, and which we hope and believe will commend themselves to you as safe.

The Muscle Shoals Hydroelectric Power Co. respectfully submits to your board the following proposals based upon the conditions therewith stated:

1. That the Government shall complete the dam at site No. 2 and the appurtenances thereto mentioned above and permanently raise the waters behind the said dam to the level of the spillway thereof within four years after the date of the first appropriation made for the carrying out of the project and not later than the 1st of January, 1919, and for a sufficiently long period of time prior to that date give entrance to the Muscle Shoals Co. for the completion by it, at its expense, of the power-house superstructures and the initial hydraulic and electrical equipment by that time.

That the Government shall complete the dam at Site No. 4 and the appurtenances thereby mentioned above and permanently raise the waters behind the said dam to the level of the spillway thereof within five years after the date of the first appropriation made for the carrying out of the project and not later than the 1st of January, 1920, and for a sufficiently long period of time prior to that date give entrance to the Muscle Shoals Co. for the completion by it, at its expense, of the power-house superstructures and the initial hydraulic and electrical equipment by that time.

2. The Muscle Shoals Co., upon the completion of the dam at Site No. 2 and the appurtenances mentioned above and the permanent raising of the waters behind said dam to the level of the spillway thereof, will pay to the Government the sum of $3,000,000 in cash as its first contribution to the cost of the lands, docks, dams, and substructures.

3. The Muscle Shoals Co., within a period of 100 years from the completion of the dam at site No. 2 and appurtenances thereto mentioned above and the permanent raising of the waters behind the said dam to the level of the spillway thereof, will repay to the Government as its second contribution for lands, locks, dams, and substructures $7,000,000, by an annual payment of sinking fund and interest, taken at the approximate rate of 3 per cent per annum and in specific amounts, to be paid as follows:

At the end of the first year after the completion of the dam at site No. 4 and the appurtenances thereto, mentioned above, and the permanent raising of the water behind said dam to the level of the spillway thereof	$75,000
At the end of the second year	125,000
At the end of the third year	150,000
At the end of the fourth year	175,000
At the end of the fifth year	200,000
And each year thereafter to the close of the 100-year period	240,000

4. The Muscle Shoals Co., as its third contribution in aid of navigation, will pay to the Government each year an amount equivalent to 30 cents per horsepower of installed capacity measured on the switchboards of the power houses. Such payments shall begin at the end of the first year after the said installed capacity shall exceed 200,000 horsepower, but not later, in any event, than at the end of 20 years from the beginning of the said 100-year period, and shall continue to the end of the said period.

5. The Muscle Shoals Hydro-Electric Co., upon the invitation of the United States Government, at any reasonable time prior to the expiration of the said period of 100 years will undertake negotiations with the Government looking to a renewal of this lease. In the event of failure to agree upon terms, this lease shall terminate at the end of said period of 100 years, and the Government shall then take possession of all the property of the Muscle Shoals Co., the value of which may be dependent upon the right to develop water power under this lease, and shall pay to the Muscle Shoals Co. a price which may have been previously agreed upon between the parties, or in the event of failure to so agree the Government shall pay for such property a fair value, to be determined by condemnation proceedings usual in the States wherein the property is located. The Government, furthermore, on taking possession shall assume all the contract of obligations of the Muscle Shoals Co. that have been previously submitted by the Muscle Shoals Co. to the Government for approval.

and which, within a reasonable time after such submission have not been disapproved of by the Government.

6. Repairs, maintenance, and operation of dams, power houses, substructures, superstructures, machinery, and appliances shall be at the expense of the Muscle Shoals Co. during the 100-year period. Repairs, maintenance, and operation of the locks shall be at the expense of the United States Government during the 100-year period.

7. The Muscle Shoals Co. will furnish the United States, free of charge, delivered to the lock grounds, electric power not to exceed 100 horsepower.

The board has asked that each bidder shall inclose with his proposal sufficient evidence to show what financial backing he may have in order to enable the board to give proper weight to his proposal. The financial interests which are the support of the Muscle Shoals Hydro-Electric Power Co. and the owners of its securities are engaged on a large scale in the development and operation of water powers in South America, Mexico, United States, and Canada and as large investors in industries requiring great amounts of hydroelectric energy. Their developments of this nature going forward at the present time involve an investment of about $15,000,000. Representatives of the company will be pleased to state verbally to your board on presentation of this proposal such additional definite information as can not properly be conveyed in a document of more or less a public nature.

We believe it is proper and pertinent to call the attention of the board to what we conceive to be the three factors of exceptional strength involved in this company's proposal.

1. It is a plan by which, through the development of water power, the United States Government is repaid all of its expenditures for navigation and water-power development and becomes the sole possessor of all the things for which that expenditure was made.

2. It is a plan by which the normal high-water flow of the stream is conserved to an extent which makes feasible the development of two or three times as much power at Muscle Shoals as could otherwise be developed. This is possible only through combining with the Tennessee River development, subject each hour of the day to the vagaries of the flow of that stream, this company's proposed water-power developments on the Tallapoosa and Little Rivers with their extraordinary storage reservoirs. It is estimated that the maximum installed capacity practicable by these combined developments will be approximately 680,000 horsepower, while that practicable by the use of the waters of the Tennessee River at Muscle Shoals alone would be approximately 200,000 horsepower. Under this plan of combination the normal high-water flow of the Tennessee River at Muscle Shoals is conserved, which under any other plan of development would reduce the available developed power to dependence upon the low-water flow.

3. This plan contemplates the application of a material part of the power to be thus developed to the manufacture of an agricultural fertilizer through the fixation of atmospheric nitrogen, an industry in which there has been in four years of commercial life approximately $60,000,000 invested and for the development of which the fundamental requirement is cheap continuous power and plenty of it.

If the joint navigation-power development at Muscle Shoals can be accomplished so that there will result a large volume of continuous cheap power, the manufacture of agricultural fertilizers through the fixation of atmospheric nitrogen should be possible on a scale adequate to afford the farmers of this great country advantages comparable to those enjoyed by European farmers.

If the board feels possibly that the Muscle Shoals Hydro-Electric Power Co. has in its proposal gone beyond the limitations of the resolution passed by Congress, under which the board is working, we rest our excuse, if any be needed, upon purpose No. 2 of the joint resolution passed by Congress authorizing the creation of your board by the War Department.

Respectfully submitted.

MUSCLE SHOALS HYDRO-ELECTRIC POWER CO.
J. W. WORTHINGTON, *President.*

MUSCLE SHOALS HYDROELECTRIC POWER CO.,
Nashville, Tenn., January 1, 1914.

Col. W. C. LANGFITT,
Nashville, Tenn.

SIR: This communication is proposed to your board as an addendum to the proposal made to your board by the Muscle Shoals Hydroelectric Power Co. under date of December 10 relative to cooperation between the United States Government and the Muscle Shoals Hydroelectric Power Co. for the joint navigation-power improvement of the Muscle Shoals section of the Tennessee River.

The estimates submitted by the Muscle Shoals Hydroelectric Power Co. accompanying its proposal of December 10 did not include, and we did not intend our proposal to include, the cost of the navigation dam designated by your board as Dam No. 1, with location just above the Florence Bridge, estimated to cost approximately $1,000,000.

In submitting this amendment to our proposal of December 10 the Muscle Shoals Hydroelectric Power Co. proposes as follows:

1. That if Dam No. 1 may be used in a dual capacity, chiefly and necessarily for navigation, and contingently establish a regulation pool below the navigation and power dam at site No. 2, the Muscle Shoals Hydroelectric Power Co. may have the right to use such regulating pool.

2. In consideration of the use of the pool to be formed behind Dam No. 1, the Muscle Shoals Hydroelectric Power Co., as its third contribution in aid of navigation, will pay to the Government each year an amount equivalent to 35 cents per horsepower of installed capacity measured on the switchboards of the power houses, instead of 30 cents per horsepower as provided in our original proposal of December 10.

3. The Muscle Shoals Hydroelectric Power Co. will furnish to the United States free of charge, delivered to the lock grounds of Dam No. 1, electric power not to exceed 50 horsepower for the operation of the navigation facilities at Dam No. 1. All repairs, maintenance, and operation of Dam No. 1 and the lock appurtenant thereto shall be at the expense of the United States Government.

In all other respects this addendum to our proposal of December 10 shall subscribe to all of the conditions set forth in that proposal.

Respectfully submitted.

MUSCLE SHOALS HYDROELECTRIC POWER CO.,
J. W. WORTHINGTON, *President.*

No action was taken upon that proposal and further consideration was given by the engineers to a plan of development of this situation, and that plan of development was again reported in a Document No. 1262, Sixty-fourth Congress, first session, a letter from the Secretary of War to the House of Representatives transmitting, with a letter from the Chief of Engineers, reports on preliminary examination and survey of the Tennessee River between Browns Island and the railroad bridge below the city of Florence. I will file this report of the Secretary of War and the Chief of Engineers with the reporter.

The CHAIRMAN. Do you wish to file it with the hearings?

Mr. MARTIN. Yes, sir.

The CHAIRMAN. Very well.

Mr. MARTIN. In this report there was again expressed by the Chief of Engineers approval of the proposed plan for the development of this project in coordination with a storage reservoir on the Tallapoosa River, and it was stated by the engineers that this was the most feasible plan for this development, and that the public interest was such that such a plan of development should be made, as in no other way could the true economic value of this power development be realized.

In the course of the report upon this subject, which I am filing, is this statement:

"It does not seem reasonable that such great benefits should be lost for the fear of possible evils to result from large power combinations. There is no doubt that either the United States Government or the State governments should control such combinations of power for the purpose of regulating rates to consumers, but combinations that produce enormous savings of energy which would otherwise be wasted ought to be encouraged rather than forbidden. True conservation requires the utilization without waste of all natural re-

sources, and here, at Muscle Shoals, there will be enormous wastage if this run-of-the-river power can not be combined with plants having facilities for storing great quantities of water to make up for the shortage at Muscle Shoals during times of low water."

This report was concurred in by Gen. Lansing H. Beach, then division engineer in charge of this section of the country, including the Muscle Shoals.

In this letter from the Secretary of War, to which I have last referred, there was contained the recommendation that this plan of development should be undertaken, but in the meanwhile there had been passed section 124 of the national defense act, which had to do with providing a nitrate supply, and the suggestion was made that possibly one of these sites might be selected by the United States Government for a development in connection with the nitrate project, and hence action on this proposal was suspended pending any action Congress or the executive branches of the Government might see fit to take. Thus the matter rested with that proposal, in so far as the Muscle Shoals Hydro-electric Power Co. was concerned.

(The report and letter referred to follow:)

[House of Representatives. Document No. 1262. Sixty-fourth Congress, first session.]

TENNESSEE RIVER BETWEEN BROWNS ISLAND AND FLORENCE, ALA.

WAR DEPARTMENT.
Washington, June 28, 1916.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated 26th instant, together with copies of reports from Maj. H. Burgess, Corps of Engineers, dated April 5, 1915, and March 22, 1916, with maps, on preliminary examination and survey, respectively, of Tennessee River between Browns Island and the railroad bridge below the city of Florence, Ala., made by him in compliance with the provisions of the river and harbor act approved March 4, 1915.

Very respectfully,

NEWTON D. BAKER, *Secretary of War.*

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS.
Washington, June 26, 1916.

From: The Chief of Engineers, United States Army.
To: The Secretary of War.
Subject: Preliminary examination and survey of Tennessee River between Browns Island and the city of Florence, Ala.

1. There are submitted herewith, for transmission to Congress, reports dated April 5, 1915, and March 22, 1916, with maps, by Maj. H. Burgess, Corps of Engineers, on preliminary examination and survey, respectively, authorized by the river and harbor act approved March 4, 1915, of "Tennessee River, between Browns Island and the railroad bridge below the city of Florence."

2. The part of the river covered by these reports is generally known as the "Muscle Shoals" section. The improvement of this section by the United States in cooperation with water-power interests has been under consideration for some years and an exhaustive report published as Committee Document No. 20, Sixty-third Congress, second session, contains favorable recommendations for such an improvement at an estimated cost of $18,701,000, of which approximately $8,575,000 was considered as representing the value of the improvement to navigation, the remainder being chargeable to power development and to be reimbursed to the United States. The information then available was considered sufficient for a general estimate of cost and a determination of the advisability of the United States adopting the project, but was not sufficient for the final selection of sites and the making of detailed estimates of cost. As a result of the present survey, the district officer suggests a few minor changes in the plans, the most important being the selection of a new site for Lock and Dam No. 2. The estimate of cost is increased from $18,701,000 to $19,000,000. He also submits an alternative plan which would permit the development of about 82 per cent of the power that would be available under the first proposition. This plan is estimated to cost $16,000,000, but is not favored by the district officer if flowage rights for the original plan can be secured at a reasonable cost. His recommendations are as follows:

(1) That provision be made by Congress for the improvement of the Muscle Shoals section of the Tennessee River for the combined purpose of providing suitable navigation facilities and for the development of power in cooperation with the Muscle Shoals Hydroelectric Power Co.; (2) that a cash appropriation of $5,000,000 be made, and that the Secretary of War be authorized to contract obligations for such material and work as may be necessary to complete the proposed improvement, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $11,000,000, exclusive of the initial appropriation of $5,000,000; (3) that the Secretary of War be authorized to adopt either the plan of improvement first described, or that designated as the alternative plan, depending upon whether satisfactory terms can be reached with the riparian owners in basin No. 3; (4) that the Secretary of War be authorized to enter into a contract with the Muscle Shoals Hydro-electric Power Co. for cooperation in the proposed work of improvement and for a lease of the power developable at the proposed power houses, under terms proposed by the company in its offer of December 11, 1913, or under such modified terms as may be agreed upon which are equivalent in valuue to the United States or which may be made necessary by reason of the selection of the alternative plan; (5) that the Secretary of War be authorized to enter into a contract with the Muscle Shoals Hydroelectric Power Co. under such terms as may be agreed upon, or to do the work by the hired-labor method; and (6) that the Secretary of War be authorized to retain in the service until the completion of the work all satisfactory employees who may be appointed because of lack of civil-service eligibles at the time of employment without regard to the subsequent establishment of a register of eligibles.

The division engineer concurs in the opinions and recommendations of the district officer.

3. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated May 24, 1916. The board states that while the results of the detailed survey and the further study based thereon suggest some minor modifications in the project already before Congress, the report is in all essentials corroborative of the earlier one and presents nothing to change the opinion expressed therein that it is advisable for the United States to take this opportunity of entering into an arrangement with the Muscle Shoals Hydro-Electric Power Co. whereby this serious obstruction to navigation on the Tennessee River will be overcome and at the same time one of the great natural resources of the country will be conserved. The board invites attention, however, to the provisions contained in section 124 of the act to increase the efficiency of the Military Establishment of the United States, approved June 3, 1916, respecting the establishment of nitrate plants to supply Government needs in the manufacture of explosives for military uses, and in view of this legislation it recommends that action on the proposed contract with the Muscle Shoals Hydro-Electric Power Co. be suspended until it has been determined whether the Muscle Shoals power will be utilized for such a nitrate plant. If this question is decided in the negative, the board is of opinion that the proposed improvement for combined navigation and the power purposes is advisable substantially as proposed by the district officer.

4. After due consideration of the above-mentioned reports, I concur in the views of the Board of Engineers for Rivers and Harbors, and therefore recommend that action on the proposed contract with the Muscle Shoals Hydro-Electric Power Co. be suspended until it has been determined whether the Muscle Shoals power will be utilized for a nitrate plant. If this question be decided in the negative, and the improvement by the United States of "Tennessee River between Browns Island and the railroad bridge below the city of Florence," is deemed advisable in cooperation with the Muscle Shoals Hydro-Electric Power Co. at a total estimated cost of $19,000,000, substantially in accordance with the recommendations of the district officer as given above, and in this case it is recommended that the first appropriation be $5,000,000, and that continuing contract be authorized covering the balance necessary to complete the project.

W. M. BLACK,
Chief of Engineers, United States Army.

Extract from report on preliminary examination of Tennessee River between Browns Island and Florence, Ala., from Maj. H. Burgess, Corps of Engineers, district engineer's office, Chattanooga district, to the Chief of Engineers, United States Army, forwarded, concurring in the opinion and recommendations of the district engineer, by Lansing H. Beach, colonel, Corps of Engineers, division engineer:

"82. The benefit to result, then, from combining the Muscle Shoals power development with the storage plants on the Tallapoosa and Little River systems is the increase of primary power from 100,000 to 280,000 horsepower, and of 10-month secondary power from 115,000 to 210,000 horsepower; and of being able to use of the potential energy at Muscle Shoals a total of about 3,330,000,000 horsepower-hours per year, as against a probable utilization of only about 2,020,000,000 horsepower-hours per year for the independent plants (assuming that 9-month secondary is developed).

"83. The importance of the combination of power plants may possibly be emphasized by showing the annual expenditure of coal required for producing an equivalent amount of electrical energy. The latest and most efficient type of steam-power plants show a consumption of coal of approximately 1½ pounds per horsepower-hour. It may be assumed that improvements will reduce this to 1 pound per horsepower-hour. On this assumption, the annual output of electrical energy for the independent development of Muscle Shoals is equivalent to the consumption of 1,010,000 tons of coal per year, and the annual amount of potential power at Muscle Shoals utilized under the combination of power plants is equivalent to an annual consumption of 1,665,000 tons of coal per year. The waste of the coal supply of the United States resulting from the failure to utilize to the greatest practicable extent the potential water power at Muscle Shoals would therefore be approximately 650,000 tons per year.

"84. It does not seem reasonable that such great benefits should be lost for the fear of possible evils to result from large power combinations. There is no doubt that either the United States Government or the State governments should control such combinations of power for the purpose of regulating rates to consumers, but combinations that produce enormous savings of energy which would otherwise be wasted ought to be encouraged rather than forbidden. True conservation requires the utilization without waste of all natural resources, and here at Muscle Shoals there will be enormous wastage if this run-of-the-river power can not be combined with plants having facilities for storing great quantities of water to make up for the shortage at Muscle Shoals during times of low water.

"85. Another great benefit from the combination of power plants which is sometimes lost sight of is the elimination of duplications of expensive transmission lines, transformers, and other equipment necessary for distribution of power. Since interest must needs be paid by some one on the extra capital invested in the duplication of equipment, it follows that the actual cost of placing power on the switchboard of the consumer is greater for separate developments than for combined plants. It is true that competition may result in the consumer paying less for power under the supposition of separate developments than in the case of combinations, and it is for this reason that it is desirable to so regulate rates of power combinations that most of the benefit of cheap production of power shall revert to the consumer rather than to the stockholder of the power company.

"93. It is not true conservation of natural sources which forbids their development on the plea that the State or General Government is not obtaining full value for the grant of privileges. There is little doubt that franchises for power developments should be for limited periods, so that the people may again take over their property and provide for its future operation under conditions suitable to the time when the limited franchise has ended. It is equally certain that the interests of the people demand a regulation of rates to the consumer, so that the company which has been granted the franchise for operating a property belonging to the people may not obtain an undue profit at the expense of the owners. Assuming such regulation, it is unimportant whether or not any payment is required to be made to the State or General Government, or what the size of such payment shall be. In any event, under the assumed regulation of rates, whatever amount is charged to the power company is paid by the consumer, and the collection of such amount is merely an exercise of the taxing power of the Government. It seems reasonable, therefore, that the present plan, which contemplates the navigation improvement of this section of the river and a more complete utilization of the potential power than seems practical by any other combination of plants, and which can be secured under fair and reasonable terms, ought to be adopted, rather than to have this power continue to be wasted for many years and to have through navigation remain obstructed by these shoals, on the ground that delay may result in securing somewhat better terms from some other power company proposing to cooperate."

Mr. MARTIN. As I have stated on another occasion before this committee, in 1918 we were notified that this site No. 2 had been selected by the President for development in connection with a nitrate supply. We were asked to donate this site and we did donate the site No. 2 to the Government. I have at a previous hearing placed in the record a letter from our company, under date of February, 1918, addressed to Col. Charles Keller, of the Corps of Engineers, making the offer of donation and the reply of the Secretary of War accepting it.

Now, the next situation that developed was this: In April, 1921, the Chief of Engineers, sent out his letter to many of those interested, and others not interested, inviting suggestions in regard to the Wilson Dam project, as it then stood.

The CHAIRMAN. Did it confine itself simply to inviting suggestions or did it ask the tender of bids.

Mr. MARTIN. I will be glad to file the letter of the Chief of Engineers.

The CHAIRMAN. Very well.

Mr. MARTIN. The letter received by the Alabama Power Co. is as follows:

WAR DEPARTMENT,
OFFICE OF CHIEF OF ENGINEERS,
Washington, April 2, 1921.

ALABAMA POWER CO.,
Birmingham, Ala.

GENTLEMEN: 1. The Secretary of War has directed me to ascertain what arrangements can be made to derive a reasonable return upon the investment if the United States completes the dam and hydraulic power plant at Muscle Shoals, Tennessee River.

2. If you are interested I would be pleased ot discuss the matter with you at this office at the earliest date that may be mutually determined.

3. It is desired to develop the matter and come to a conclusion at as early a date as possible.

Very truly, yours,

LANSING H. BEACH,
Major General, Chief of Engineers.

Now, the question of what arrangements might be made to derive a reasonable return upon the investment, if the United States completed the dam and hydraulic plant presented, of course, a very big question to all of us, and our company was interested, naturally, in the question because of its long connection with this whole situation.

We replied to that letter under date of May 28, 1921. Our letter has been introduced, but not certain exhibits which were attached, and I will take the liberty of handing to the reporter, if the chairman permits, the letter with the exhibits, to be incorporated in the record.

The CHAIRMAN. Were the exhibits presented to be put into the hearings?

Mr. MARTIN. They were not put in the record by the one who offered the letter. The exhibits were not attached, and I would like to have them in the record.

The CHAIRMAN. Very well, if they are a part of the letter.

Mr. MARTIN. Yes; they are a part of the letter and are referred to therein, and in order to get the letter entirely before the committee it might be better to introduce the whole letter at this point. In this letter our company reviewed the situation with regard to the Tennessee River and the Tallapoosa River situations to which I have referred, and in the course of the third paragraph of our letter made this statement with regard to our previous proposal:

"Believing that this was an economical and profitable undertaking, we were prepared under the conditions then existing to proceed with our share of this undertaking, and if this recommendation had been favorably acted upon the project would have been available for the manufacture of nitrates during the war period and many millions of dollars would have been saved."

We further invited attention to that provision of section 124 of the national defense act which provides that these plants should be constructed or operated solely by the Government; and hence there was no authority in law to deal with the subject at that time, nor any indication as to what extent the Con-

gress would authorize a part of this power supply to be devoted to commercial or industrial uses; but we did state that if those conditions and difficulties were cleared up, that our company was of the opinion that the development could go forward and be completed with the view of the sale and distribution of a sufficient volume of power therefrom by this company and others engaged in the public service in the territory adjacent to the development to enable the United States to derive a reasonable return upon that part of the project and the investment which might be allocated to the power feature of the project, and that we were prepared to cooperate in any manner desired by the United States in working out the project.

(The letter and exhibits referred to above are as follows:)

ALABAMA POWER CO.,
Birmingham, Ala., May 28, 1921.

Maj. Gen. LANSING H. BEACH,
Chief of Engineers, Washington, D. C.

DEAR SIR: We duly received your communication of April 2, 1921, inquiring what arrangements can be made to derive a reasonable return upon the investment if the Government completes the dam and hydraulic power plant at Muscle Shoals, Tennessee River, and you invite a discussion of the matter if we are interested.

We hive given the subject of your letter careful consideration since its receipt and wish to make a reply as follows:

1. The site at which the dam is being constructed on the Tennessee River was purchased by our company in 1906, and from that time until 1918, a period of 12 years, we expended large sums of money in making studies, exploring foundations, and in the purchase of reservoir lands, with the view of its development as an integral part of the hydroelectric system which would be required to meet the needs of the communities which the company proposed to serve from time to time. It was our plan to construct storage reservoirs and to connect them with the proposed Muscle Shoals development to make up the deficiency in power at the latter place during seasons of low water. This fact alone would have enabled this company to plan for an ultimate installation at Muscle Shoals largely in excess of the installation that should be made as an independent, separate development. In short, our plans were adapted to fully conserve and utilize in the public interest the navigation and water resources of the region.

2. In the meanwhile we acquired other power sites in Alabama, and under an act of Congress of 1907, constructed a dam and power plant on the Coosa River, a smaller hydro plant on a nonnavigable stream, and several steam plants at different points on our sysem, with a total capacity of 177,400 horsepower (not including the Government steam plant at Warrior). This system embraces about 1,500 miles of high tension lines over which we are distributing energy to the public in more than two-thirds of Alabama, including one of the greatest industrial and mining districts in the country.

3. During the same period the engineers of the United States were investigating the project pursuant to the direction of Congress. A special board of engineers was created for the purpose of obtaining information and estimates relative to the cooperation of proposed improvements for navigation and water power, and that board invited bids for cooperation by water power interests in the proposed development. This company, through its subsidiary, Muscle Shoals Hydroelectric Power Co., submitted a plan in response to that invitation of the United States Engineers. Plans were also submitted by others, but upon careful investigation the special board recommended that Congress undertake the improvement in cooperation with this company, and that recommendation was concurred in by the Board of Engineers for Rivers and Harbors and by the Chief of Engineers. Believing that this was an economical and profitable undertaking, we were prepared under the conditions then existing to proceed with our share of this undertaking, and if this recommendation had been favorably acted upon the project would have been available for the manufacture of nitrates during the war period, and many millions of dollars would have been saved.

4. A further examination and survey of the project was made by the engineers of the United States in compliance with the provisions of the rivers and harbors act approved March 4, 1915. Recommendation was again made that the improvements be undertaken in cooperation with this company, but the engineers further recommended that action be suspended until it should be determined whether the Muscle Shoals power would be utilized for a nitrate plant under the act of Congress of June 3, 1916 (Doc. No. 1262, 64th Cong., 1st sess., 1916).

5. We are adverting to these matters in order that you may see that we were for a number of years interested in working out a feasible plan for the development of the Muscle Shoals power for general industrial use on lines of coordination with improvements for navigation. However, in 1918–19 this particular site was selected for development by the United States to supply power for a nitrate plant; and as it seemed that the United States needed to go forward quickly in its war program to make provision for nitrates, we concluded, as the result of various conferences with representatives of the Government, to donate to the United States the dam site and other lands owned in fee by this company, leaving entirely to the Government the question of any plan for future cooperation with the United States. This donation was made, and we received from the United States its voucher for the sum of $1, being the nominal consideration expressed in the deed. As you may recall, the donation was accepted in behalf of the United States by the Secretary of War, under date of February 20, 1918, who expressed the thanks of the Government for the company's action in so donating the property. The property thus donated represented on our books a total investment by this company to the time of the donation of approximately $476,000, but we desired to be helpful to the Government in its war program and made the donation in that spirit. From that time until the receipt of your letter we have taken no action with regard to the Muscle Shoals project other than the interest common to every patriotic citizen to encourage the progress and development of the Tennessee River Valley and the contiguous country.

6. We do not wish to suggest a course contrary to the expressed purpose of Congress that all of the Muscle Shoals power shall be used in the manufacture of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizer and other useful products. Practically all of the electrical power used in industrial and mining operations in Alabama is furnished by this company, in addition to which we supply the lighting and other municipal requirements to more than two-thirds of the State; and if, in the wisdom of Congress, all of the power at Muscsle Shoals should be reserved for nitrate purposes, or applied to any other use considered to be of greater benefit than the public service rendered by the company, we will continue our program to develop other water power as the public needs may require.

7. We therefore wish to mention the following difficulties in the way of making any suggestion at this time which will be of substantial assistance to the Government in dealing with its problem at Muscle Shoals.

(a) Section 124 of the national defense act of June 3, 1916, under which the Muscle Shoals dam and power plant are being constructed, contains the following clause:

"* * * The plant or plants provided for under this act shall be constructed and operated solely by the Government, and not in conjunction with any other industry or enterprise carried on by private capital * * *."

This, of course, presents a serious legal question as to the authority of the Secretary of War, the Federal Power Commission, or other agencies of the Government to deal with the project without further legislation by Congress. In addition, funds must be provided, and the delay and uncertainty of action by Congress is a very serious element in any proposal.

(*b*) This company is not advised as to the extent to which the Government is disposed to consider a portion of the investment as being due to war emergency; or what portion may properly represent its power supply for nitrate purposes, in addition to which it is assumed that a portion will be charged to the improvement of navigation of the Tennessee River. These are vital considerations, inasmuch as excessive costs would burden the entire future of the power development, increase the cost of power to consumers and tend to discourage industrial enterprises which, with low power costs, should supply a market for a part of the Muscle Shoals power.

(*c*) This and other power companies engaged in public service are in duty bound promptly to find and develop sources of power at the lowest practicable cost to supply the rapidly increasing demands of the communities served. These demands are at this very moment most insistent. To fulfill its immediate requirements this company has applied to the Federal Power Commission for a license and is about to construct an important additional hydroelectric development on the Coosa River. While it is true that the power thus secured will be completely absorbed and new sources required by the time the Muscle

Shoals dam could be completed, yet the difficulties above mentioned and the doubt which arises from the apparent reluctance of Congress to sanction an agreement of cooperation, as shown by clause of the act of 1916 above quoted, suggest that this company would scarcely be justified in depending upon Muscle Shoals to take care of even more remote demands which are certain to arise and which must be prepared for well in advance.

8. If the above difficulties and uncertainties can in any manner be cleared up, and excessive costs avoided by fair charges to war emergency, power for nitrate purposes, and improved navigation, this company is of the opinion that the development can go forward and be completed with the view of the sale and distribution of a sufficient volume of power therefrom by this company and other companies engaged in public service in the territory adjacent to this development to enable the United States to derive a reasonable return upon such part of the investment as may be properly allocated to the power feature of the project.

9. Our company, together with adjacent power companies, possesses the necessary organization for the distribution of the power to the public, and while the principal markets in the South are now served by these companies, their transmission systems would have to be supplemented by new lines and other equipment to market this power. The power systems in the Southeastern States are now interconnected and the advantage to the public of such interconnection was the subject of a careful survey by eminent engineers acting under your direction and the subject is thoroughly discussed in a report prepared in the office of the Chief of Engineers by Col. Charles Keller and now printed as an official document entitled, "The Power Situation During the War."

We are inclosing with this letter further excerpts from that report which discuss at length the Muscle Shoals development.

10. It will require much consideration and study to enable us to present any definite commitment, and would, furthermore, require a more definite statement as to when the power would be available and as to just what portion of the cost would be accepted as the investment in the power project; these being elements which you will appreciate are vital in determining a course in the matter so far as our ability is concerned to take the power at a price affording the United States a reasonable return.

We may add, however, that during our connection with the project, as shown by our formal proposals in response to the Government's invitation (Docs. Nos. 20 and 1262), we regarded the construction of a power dam (at reasonable costs and on commercial plans) at this locality as both a practicable and profitable undertaking; and if there is a possibility that the Government will wish to have any part of the power used in a practical way for commercial purposes, then we would like to urge now that some disposition of the matter be made as early as possible, as you can appreciate that in its present status it is a disturbing feature in the industrial situation in this section.

If, therefore, authority is conferred by Congress to conclude a contract for the use of any part of the power by power companies, we wish to assure you that we are ready to work out a mutually satisfactory arrangement looking to the completion of the dam and the disposal of such part of the power as Congress wishes to place in commercial use; desiring now, as at all times in the past, to cooperate in every way desired by the United States in working out the matter.

Yours, very truly,

ALABAMA POWER CO.,
By THOS. W. MARTIN, *President*.

APPENDIX.

EXCERPTS FROM THE REPORT PREPARED IN THE OFFICE OF THE CHIEF OF ENGINEERS, ENTITLED "THE POWER SITUATION DURING THE WAR."

The following is from Appendix E, entitled "Electric-Power Problems in the Southern States," pages 237–238 of that report.

The great advantages of interconnection and joint operation of power systems, and the economies in the building for increase in operating capacity, as herein stated, apply equally to a combination of the privately owned companies with the Government powers now building at Muscle Shoals. The characteristics of this Government power and the gain, both to the Government power and to the privately owned powers that would result from interconnection and exchange of facilities, was an important consideration in the recommendation of the Tallapoosa River project, inasmuch as the interstate combination, with other power substituted for Tallapoosa, might be quite favorable as the Taliapoosa powers is a combination without Muscle Shoals.

"21. Under the present laws the Government Muscle Shoals hydro power now building can not be connected to or operated in conjunction with private interests. * * *

"25. The proposed interstate power system above described, including the proposed Tallapoosa River developments, and capable, as stated, of producing 2,100,000,000 kilowatt hours of prime power annually, if combined and operated in conjunction with a hydro plant at Muscle Shoals with 300,000 kilowatts ultimate installed capacity as proposed, would be capable of producing, in years of normal river flow, 2,880,000,000 kilowatt hours annually of prime hydro power without any steam generation."

The following is also from Appendix E, entitled "Electric power problems in the Southern States," pages 264 to 267, inclusive, of the report entitled "The power situation during the war":

"PART 5.

"GOVERNMENT HYDROELECTRIC DEVELOPMENT AT MUSCLE SHOALS, ALA.—RECOMMENDATIONS FOR ITS UTILIZATION.

"140. The proposed hydro development at Muscle Shoals authorized by the Government and now being built under the direction of the Chief of Engineers, United States Army, provides for a high dam in the Tennessee River and the installation of electric machinery for the generation of power. The river flow and other natural conditions at the site selected will permit the generation of 40,000 kilowatts during stages of low water to an extreme low year, and 300,000 kilowatts can be generated during five months in years of normal river flow.

"141. By act of Congress (39 Stat., 215) it is provided that 'the plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital.' The terms of the act are such that it would be unlawful to interconnect this plant with central station power systems of the Southern States and use even a portion of this power for other than Government industries.

"142. This report on the power resources of the Southern States has been prepared to point out the most economic and reliable source of power that can be utilized for serving the industries of the South with a view to securing maximum economy in generation, and the resources in water and steam power thus far considered have excluded the Muscle Shoals project, by reason of the existing law prohibiting the use of this power for private purposes.

"143. The procedure is illogical and unreasonable, because in order to provide cheap power it is necessary that the best sources of power be used, whether they are hydroelectric development using the natural flow of the river, or whether they are hydroelectric powers with storage reservoirs that conserve the water during the high-water stages for use during low-water stages, or whether they are sources of steam power, and, further, it is necessary to operate these powers jointly to obtain maximum economy, reliability, and conservation of resources in fuel, labor, and materials.

"144. The best economy and reliability can not be secured by any one development, whether it is hydropower by flow of streams, or by storage, or steam power, but will be obtained by a suitable combination of these different sources and by the interconnection of the systems applied by them. Muscle Shoals has been selected by the Government as a favorable location to the production of cheap power. The proposed design will furnish 100,000 kilowatts of prime power and 200,000 kilowatts of second-class power in an average year. The steam plant of 60,000 kilowatts which the Government has installed at Muscle Shoals is capable of converting a portion of the second-class power to prime power. But this combination with a steam plant at Muscle Shoals, regardless of whatever economy may result, can not be, broadly speaking, as favorable for all interests, either the Government interests or private interests, as a combination of the Muscle Shoals steam and hydro powers with an interconnected group of public-utility systems as described in this report. To segregate the Muscle Shoals power facilities from the other systems of the country is contrary to the policy recommended and strongly advocated; that is, of interconnecting all of the efficient going power systems and jointly operating them for maximum

economy. The same principle which works for increased economy by interconnecting the public-utility power systems of the Southern States applies to a further interconnection, including the Muscle Shoals plants, and in the interest of cheap and reliable power the law should be changed and the interconnection and joint operation of all the developed power should be provided for.

"145. It is important that the law should be modified and the plants perfected at as early date for the joint operation of all southern electric utilities and the Muscle Shoals power, since the recommended future construction for the development of power facilities for the southern States must depend, in a large measure, on whether or not Muscle Shoals will be available for other than Government work. For instance, if Muscle Shoals power is to constitute an important source of the generating capacity of an interconnecting system for the southern States, the logical procedure for other developments by the public utility companies will be to build hydro plants with large storage reservoirs and steam plants, both of which will work economically in conjunction with the second-class power of Muscle Shoals, instead of developing additional flow of stream hydropower, which they might otherwise do if Muscle Shoals will not eventually be available for interconnection; and, on the other hand, if they develop flow of stream power, instead of storage hydro or steam power, the lack of assurance that Muscle Shoals will not be available in a few years, their own resources will not be of a nature to advantageously supplement Muscle Shoals and turn its second-class power into prime power should the Government policy later be changed. Even if a Government demand is built for the entire use of Muscle Shoals, the Government would be handicapped in having a large amount of second-class power, which is not so valuable as prime power, and for which it would not have the most effective source of conversion of second class to prime power.

"146. It is especially desirable that the interconnection to the combined southern power system be available for the purpose of distributing the Muscle Shoals power immediately upon its completion, and at least until its own market can be obtained, and that the developments for the next 5 to 10 years be directed toward the construction of such plants as will advantageously supplement Muscle Shoals. By this is meant by the time Muscle Shoals is completed it is perfectly practicable for the power systems of the southern States to acquire a connected load that will absorb a large part of the Muscle Shoals output and to have installed such plants of their own creation as will be useful to turn Muscle Shoals second-class power into prime power.

"147. It is argued that the Government steam plant can be used, when the hydro plant at Muscle Shoals is finished, to turn a large part of the second-class power into prime power. This is true; it can be used, but it is not the best plan available. There are large steam plants already built, and others will probably build before Muscle Shoals is completed, which, because of their more advantageous location for fuel, can make steam power more cheaply than the Government steam plant at Sheffield. Also, if the future load for Muscle Shoals is in a large part located at industrial centers in Alabama instead of in the Muscle Shoals-Sheffield district, the existing steam plants and prospective future steam plants will be more favorably located than the Muscle Shoals steam plants for joint operation with Muscle Shoals hydro power. This feature is important from the standpoint of reliability of service and transmission cost as well as in economy of generation. In fact, if Muscle Shoals is interconnected with the other southern power systems and generally operated with them for maximum economy, the steam plants in the industrial section of Alabama, and favorably located at the mines for cheap fuel, would be put into operation in case of low water before the Muscle Shoals steam plant would be started.

"148. If interconnection between Muscle Shoals and the big public utility power companies of the Southern States is not planned for in the near future and eventually carried out under favorable conditions, the Government development at Muscle Shoals is liable to result not in cheapening power for the industries of the South but rather in increasing the cost. It is a matter of common knowledge that one of the large private interests acquired the water-power site at Muscle Shoals and spent a large sum of money in preparation for a hydro development similar to the one now being built by the Government, with the intention of distributing this power to the industries of Alabama, which would logically later on, through interconnections, be extended to service in Georgia and Tennessee. The Government has come into the situation and taken over this source of power and is building the plant, as provided by law, exclusively for Government use; and if this is carried out it will result in private industries being deprived of this natural resource, which, by reason of the Government's own action in neglecting this power for its use, may be regarded as a cheap source of power.

"149. We have no figures as to what the Government estimates the cost of Muscle Shoals power will be, either primary power or second-class power, since the undertaking at this place is for the joint purpose of improving navigation and for creating power, and we are not informed as to the proportionate charge that goes to these two purposes. It is, however, obvious that if a big power load is to be built up about Muscle Shoals it must be done either by direct Government operation or else the attraction in the way of low-priced power must be very marked to divert manufacturing from the present industrial centers and favorable location for raw materials and transportation to the district adjacent to Muscle Shoals, which is sparsely developed industrially. If the inducement in the way of cheap power is sufficient to overcome the natural conditions as established by the superior industrial progress in other sections, the power at Muscle Shoals must be available at a relatively low rate, which also, without modification of the present law, would have to be wholly for Government purposes.

"150. It therefore appears that a broad and well-founded judgment would dictate that the Muscle Shoals development should be interconnected for exchange of power with the existing power systems of the Southern States and that this interconnection and exchange should be arranged for without delay, so that future construction, both at Muscle Shoals and elsewhere, can be directed for the production of plants which will supplement such other for economy of construction and operation."

I would like at this point to invite your attention, Mr. Chairman, to another report of the engineers of the United States dealing with this project in its uncompleted condition.

There was a report prepared in the office of the Chief of Engineers and transmitted to the Secretary of War in 1921, entitled "The Power Situation During the War" reviewing the activities of the Government touching various aspects of the power question which arose during the war, with comments upon the efforts made to coordinate power resources, to get power for the benefit of war industries, and containing suggestions for the coordination of power developments in every section of this country looking to the better utilization or greater utilization of all the power resources.

There is a large part of this report devoted to the Muscle Shoals situation. The gentlemen who made this report in behalf of the Government on this Muscle Shoals project—that is to say, the Dam No. 2 and the Dam No. 3, not then started—considered its relation to this proposed Tallapoosa development and again recommended in this report that the development should proceed along the lines of the previous reports of the Engineers of the United States.

I would like to just read a few lines from this report. There are a number of pages devoted to this very question which are extremely important and extremely interesting and we trust that you, Mr. Chairman, and the members of the committee will take the time to read what these gentlemen said in this report, so recently filed and printed in the year 1921.

The CHAIRMAN. Do you desire to offer the whole report for the hearings?

Mr. MARTIN. No, sir; but excerpts from this report were attached to our letter to the Chief of Engineers of May 28, 1921, and thus there will be in the record all those parts which have to do with this development.

This report proceeded upon the theory that this development should proceed, this power developed and this great power station interconnected with the power development in other watersheds in Alabama and other States. This is from page 237 of the report:

"The great advantages of interconnection and joint operation of power systems and the economies in the building for increase in generating capacity as herein stated apply equally to a combination of the privately owned companies with the Government's powers now building at Muscle Shoals. The characteristics of this Government power and the gain both to the Government power and to the privately owned powers that would result from interconnection and exchange of facilities was an important consideration in the recommendation of the Tallapoosa River project, inasmuch as the interstate combination, with other power substituted for Tallapoosa, might be quite as favorable as the Tallapoosa power in a combination without Muscle Shoals."

The CHAIRMAN. How many pages are there in that report?

Mr. MARTIN. This report involves about 300 pages.

The CHAIRMAN. Would you kindly refer to the report, so that it may be identified in the record?

Mr. MARTIN. It is entitled "The Power Situation During the War," by Col. Charles Keller, Corps of Engineers, War Department, Office of the Chief of Engineers, dated December 13, 1919, and is addressed to the honorable the Secretary of War, through the Chief of Engineers, United States Army, Washington, D. C.

The CHAIRMAN. The reason I wanted you to identify the report was that in case any Member wanted to look it over he would know just what document is referred to.

Mr. MARTIN. It is not described by a document number, but it is printed as a public document.

The CHAIRMAN. Do you wish to read any more from it?

Mr. MARTIN. I will not, except to say that in our proposal submitted a day or two ago to the Secretary of War we quoted section 150 of this report, as follows:

"It therefore appears that a broad and well-founded judgment would dictate that the Muscle Shoals development should be interconnected for exchange of power with the existing power systems of the Southern States, and that this interconnection and exchange should be arranged for without delay, so that future construction, both at Muscle Shoals and elsewhere, can be directed for the production of plants which will supplement each other for economy of construction and operation."

In substance that is the recommendation of that report.

Our attention was again invited to this question by Gen. Beach in a letter dated June 18, 1921, which I will hand the reporter to be made a part of my statement, as follows:

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, June 18, 1921.

Mr. T. W. MARTIN,
President Alabama Power Co.,
Birmingham, Ala.

DEAR SIR: I would like to inquire what power the Alabama Power Co. would desire or be willing to take from Muscle Shoals two years from this date, and also three years from this date, if one year's advance notice of actual date at which power could be delivered could be given and a satisfactory price is guaranteed.

Very truly, yours,

LANSING H. BEACH,
Major General, Chief of Engineers.

Now, we replied to that letter under date of the 14th of July, 1921, which I would also like to place in the record, in which we point out that at the time of this letter, July, 1921, we were engaged in the construction of a new hydro plant on the Coosa River in Alabama, under a 50-year license from the Federal Power Commission which would give us approximately 100,000 horsepower; that that development would be completed by the end of the year 1922, but that the power from this development would be absorbed immediately, and that further power would be needed in Alabama in our own situation, and that we would be impelled to go further with some further power development some time in the present year to meet the demands in the State of Alabama unless we could have some program aranged by which this Muscle Shoals power could be made available.

Now, I would like to make it very clear that the particular power development in progress in the year 1922 will supply only the market which exists to-day, which is supplied from steam power, and will be completely absorbed, practically, upon its completion. We stated to Gen. Beach that a study of the power markets in our territory convinced us that the demands for power would require further sources, which should be available by 1926 at the latest.

We are still in the position stated, and it is now quite clear that our anticipation or forecast of power requirements in the territory which is immediately served by the lines of our company and in the territory which is easily adjacent to this development are so large that there can be no doubt that this entire development would be absorbed promptly upon its completion.

(The letter above referred to follows:)

ALABAMA POWER CO.,
Birmingham, Ala., July 14, 1921.

Maj. Gen. LANSING H. BEACH,
Chief of Engineers, United States Army, Washington, D. C.

DEAR SIR: We wish to acknowledge receipt of your letter of the 18th ultimo, inquiring what power this company would desire or be willing to take from Muscle Shoals two years from that date, and also three years from that date, if one year's advance notice of actual date power could be delivered could be given and a satisfactory price guaranteed.

We wrote you under date of May 28 last regarding certain aspects of this problem, to which we beg to refer in connection with our answer to your letter. As therein stated, we have insistent demands for power; that to fill its immediate requirements this company has applied to the Federal Power Commission for a license to construct an important additional hydroelectric development on the Coosa River, and added:

"While it is true that the power thus secured will be completely absorbed and new sources required by the time the Muscle Shoals Dam could be completed, yet the difficulties above mentioned and the doubt which arises from the apparent reluctance of Congress to sanction an arrangement of cooperation, as shown by the clause of the act of 1916 above quoted, suggest that this company would scarcely be justified in depending upon Muscle Shoals to take care of even more remote demands which are certain to arise and which must be prepared for well in advance."

We concluded our letter in this language:

"If, therefore, authority is conferred by Congress to conclude a contract for the use of any part of the power by power companies, we wish to assure you that we are ready to work out a mutually satisfactory arrangement looking to the completion of the dam and the disposal of such part of the power as Congress wishes to place in commercial use, desiring now, as at all times in the past, to cooperate in every way desired by the United States in working out the matter."

Since that letter was forwarded to you the Federal Power Commission has issued to this company a license to construct the Coosa development. We are planning to install 60,000 horsepower and preliminary construction is now beginning. It is our purpose to prosecute the work with all diligence with the view of having power available therefrom in the spring of 1923. While the initial installation as now planned is 60,000 horsepower, the ultimate installation will be 120,000 horsepower. In going forward with this development we considered that we were in duty bound to proceed, because it did not seem at all possible that the Muscle Shoals hydro development could produce any power during 1923 or 1924. Our power demands are at present in excess of our water-power capacity, but the power which will result from the new Coosa development will fulfill our immediate requirements; i. e., will enable us in 1923 to greatly reduce our steam running and we will thus be enabled to meet the public demands during 1923 and for the most part in 1924 with the output of our hydro plants.

However, we wish to say that study of the power markets in the territory served by our company convinces us that the demands for power will require further sources which should be available during 1926 at the latest.

We must make our plans for several years in advance of actual power needs, and longer notice than one year in advance of actual date at which the Muscle Shoals power could be delivered would be necessary for this company to commit itself for the taking of definite amounts of power; and unless a commitment can be made not later than March, 1922, by the United States Government for the delivery of definite amounts of power, we will find it necessary to proceed with another hydro development in Alabama to meet our requirements. We will be glad meanwhile to discuss the subject with you in a definite way if desired.

Awaiting your further suggestions, we are,

Yours, very truly,

ALABAMA POWER CO.,
By THOMAS W. MARTIN,
President.

During the year 1921 financial conditions which would enable a company such as ours to finance the Wilson Dam to completion were not satisfactory, and it it only resulting from the financial conditions of very recent weeks, or the last two months, that have made it practicable for a company engaged in such service as our company to make a proposal that will undertake the financing of this project.

The financial conditions have improved, have substantially improved, in so far as concerns the sale of long-term securities, within the past 60 or 90 days or four months, and the conditions are such that we are prepared to, and can, go forward with a program such as we have outlined in our proposal.

I would like to say just a word or two on the question of the power market which exists for the power from this development.

The present power and lighting load which is carried on the system of the Alabama Power Co. is approximately 135,000 horsepower. We have established what we call the maximum peak load of our system, which is as high as 160,000 horsepower; that is, we have carried at recent times, within recent months, 160,000 horsepower for short periods. With a return to normal business during the present year, and having regard to applications for service which have been made to our company, the service within our own State will increase our power load to a definite, day-to-day program of 160,000 horsepower.

As we go along in the power business we find there is a certain natural growth of load due to the increased demand of existing customers.

There are also new industries normally coming into a system such as ours, which we assume to be, from our experience, approximately 10 per cent per annum.

That will carry us by the 1st of January, 1926, we will say, just on the system we have to-day without any extension of the system at all, to 210,000 horsepower.

In addition to that there is service very near our line, exclusive of railway electrification, of 160,000 horsepower, which is now served from isolated plants or plants which would be discontinued and which would be very glad to have central station service if and when available.

Now, that is within the State of Alabama alone. We have made investigations into various sections of the South. Inquiries have been made to us from various sections of the South.

I would like to take the liberty of calling the attention of the committee now to a map which we have prepared, as probably you can see from there, Mr. Chairman. With Muscle Shoals as a center, there are lines drawn at intervals of 50 and 100 miles—the light lines are 50 miles from Muscle Shoals and the heavier dark lines are 100 miles. In a radius of 150 miles, we will say, there is Memphis, which has no hydro service, of course; Jackson, Tenn., which has none; Nashville, Tenn., has hydro service, but should have additional service: Columbia, Tenn., the same; and you will also see Meridian, Miss., and in the next line you will see, 150 miles away, Little Rock and Vicksburg. You will see that Jackson is within 200 miles. I was mistaken about Little Rock and Vicksburg. They are within a radius of 200 miles. Going farther, we have at 300 miles Natchez, Mobile, and at a farther distance of slightly over 350 miles New Orleans, Baton Rouge, Pensacola, and at 400 miles the city of Shreveport.

We have for a long time been asked to consider the extension of transmission lines from power developments in Alabama to New Orleans, to Mobile, to Pensacola, to Little Rock, to Memphis, to Meridian, and in fact to all the towns and cities that you see in that circle, and you will notice that Paducah is within easy transmission distance of this Muscle Shoals development.

I would also like to mention, Mr. Chairman, that whereas this circle shows a 400-mile radius from Muscle Shoals, when you come to actually transmit power to places such as Mobile, Pensacola, and New Orleans, the logical program would be to develop powers in or near Montgomery, Ala., or northeast of Montgomery, in the rivers in that section, running transmission lines from there down to New Orleans, transmitting the power that is generated in that district southeast, and Muscle Shoals, of course, supplementing the whole situation. But there can be no development and no transmission of power to meet anywhere near the approximate needs of the communities southwest and south unless the Muscle Shoals development is made available in this whole situation.

It is, of course, the largest water power in the South, and without it the developments which exist in this immediate territory are not sufficient to supply these markets in the States of Mississippi and Louisiana, and even as far away as Memphis.

It is interesting, as, of course, you gentlemen know, that when we reach the end of the Appalachian chain in the State of Alabama there is no water power after you pass Alabama until you get beyond the Mississippi River, hundreds of miles away. That whole development of water power in Alabama, then, is the last, and the last opportunity the public will have south and southwest to obtain hydro power. If withdrawn from the public service, there is no opportunity for them ever to obtain hydro power. It is possible, but only possible, that even the city of Memphis may obtain hydro power if Muscle Shoals is withdrawn. If that entire development, as has been announced by others on this board, is devoted purely to local development, then there is no chance for Memphis to obtain hydro power except by excessively long transmission lines through the State of Tennessee from developments hundreds of miles away, which is a doubtful problem.

These markets to which I have referred and which are within transmission distance of these developments have a total power load to-day of approximately 200,000 horsepower.

In addition to that, the existing companies in the States of Tennessee and Georgia might be very substantially supplemented from this development, which we estimate at 70,000 horsepower.

Railway electrification in Alabama and other southern States should require large volumes of power which we have estimated at 240,000 horsepower.

There is then a possible power load, inclusive of the present load on our system plus this prospective load by 1926, of 880,000 horsepower.

By January 1, 1926, without any further power developments, the Alabama Power Co. will simply have 190,000 horsepower, sufficient alone for the needs of the limited circles we are now serving in Alabama.

The result of this whole calculation, which I will put in detail in the record, is that if there is no effort to supply these natural market demands by January 1, 1926, there will be a shortage or a deficit of approximately 500,000 horsepower in the territory to which I have referred and which should be supplied logically from the Muscle Shoals development.

A large part of this Muscle Shoals power, undoubtedly, will in any case be consumed at the place of development. It is the natural thing to expect that that will be done. It is also natural to expect that a part of this power that is available or can be developed in Alabama will reach other sections of the South to which I have referred. I will hand to the reporter the detailed statement which I have used in my explanation of the power demands in this section.

(The statement referred to follows:)

General statement concerning power situation in Alabama and contiguous territory.

	Horsepower.
(1) The present power and lighting load of Alabama Power Co. can be considered as	135,000
(2) The maximum load established in December, 1921, due to urgent needs for power in Georgia and Carolina, was	160,000
(3) With a return to normal business conditions in coal, iron, and textile industries in 1922, the power and lighting load, exclusive of requirements in Georgia and Carolina, will be	160,000
(4) Assuming 10 per cent per annum as a measure of natural growth of load due to increased use by present customers, plus new industries that will be attracted into the State by low-priced power, the load in 1926 will be	210,000
(5) There is an available power load in territory adjacent to present transmission lines of Alabama Power Co., exclusive of railway electrification, of	160,000
(6) There is a power load available to Alabama Power Co. by extension of lines to Memphis, New Orleans, Mobile, Meridian, etc., of	200,000
(7) The Tennessee Power Co., the Georgia Railway & Power Co., the Columbus Power Co., the Central Georgia Power Co., in order to supplement existing plants, will absorb	70,000
(8) Railway electrification in Alabama alone offers a potential market for	240,000
(9) The total load in 1926, inclusive of present load plus prospective load, may reasonably be	880,000
(10) Alabama Power Co. present generating capacity	190,000
(11) Additional generating capacity from Muscle Shoals steam plant	80,000
(12) Additional generating capacity from Mitchell Dam	110,000
(13) Total generating capacity available under present program without Muscle Shoals in 1926 will be	330,000
(14) Deficit to be supplied by Muscle Shoals	500,000

The map which has just been handed to the members of the committee, Mr. Chairman, is an illustration of the power situation in the South and of the industries which now exist in or near power lines. Of course, the striking thing about this map is the industrial development of the States with water power and the development in those States that have no water power, which is most strikingly shown in each of the States that have such power.

I would like to mention here that in addition to service to districts south and west of Alabama, there has developed in recent years a program of interconnecting the lines of power companies, with the view of assistance one to the other in time of trouble and difficulty.

There arose within the past six months a serious shortage of power at Raleigh, N. C., and the district surrounding, which is shown on the map which has just been handed to you. That district is served by a power company. I believe it is the Carolina Power & Light Co. Their water-power plants were down and their steam plants could not operate because of the low water. The drought was so extreme that the water was needed for domestic use. Water was hauled by train to keep steam plants going even for part of the time for house lighting. The industries were down. New connections were completed at certain points so that our system could render some service to relieve that situation. None of the intermediate companies could do so. Our company having this whole Warrior station, having a better condition as to water at that time so far as the Coosa River goes, was enabled then to transmit some power to the Georgia Railway & Power Co., and that company to the next company, and so on, with the result that cities and towns 600 miles away were directly benefited, industries were started, and public service began, as a direct result of our sending power to Georgia, and so on, by a system of relaying to the Raleigh district.

It was in that connection that we then applied to the Secretary of War for a lease upon the Sheffield steam plant at nitrate plant No. 2, a temporary lease for that plant, to further aid this whole power situation in those States, to meet the conditions of last fall and the conditions which we anticipate will arise this year.

The Secretary of War investigated the power conditions in this territory and had an Army officer go throughout the territory and spend some days there, and he concluded that there was then a power shortage, and that there would be a power shortage this year, so that the Secretary of War leased the Sheffield steam plant to the Alabama Power Co. for a period of one year, under a lease subject to termination at any time, for the relief of this whole power situation.

I might say in passing that we claim no property interest or rights in that steam plant. It is not an issue here, although I do regret, Mr. Chairman, that some one has confused the Sheffield steam plant in our own State with the Gorgas plant, and has complained to the committee that we had leased the Sheffield steam plant under this terminable lease, and are claiming rights under it. We are not, but there was a confusion on the part of some whom I know have confused it in telegrams sent to this committee. We claim no rights under that lease except to operate it from day to day until the Secretary of War sees fit to terminate it, and he reserves the right to terminate it in the event Congress authorizes the disposition of this property in some other way.

That plant did not get into service in time to meet the needs of this section last fall. Many difficulties arose due to the fact that the plant had been idle for some two years. The plant is now ready to operate. Of course the river is running now, but we will have serious need for that plant this year, and so will other companies in this section, supplementing existing power supplies.

During the years 1923 and 1924 there will be several power developments in this section which will be completed. We have every reason to feel, however, that that steam plant will be very important for the present year, but we claim no property rights in it. It is absolutely, of course, in the control of the Secretary of War to terminate that lease at any time.

Mr. Chairman, I would like to refer to two other points, and then I will close my statement.

In our plan proposed to this committee through the Secretary of War there is involved the financing of the Wilson Dam and the power-house development. We will agree to take care of that completion. We will agree to pay $5,000,000 for the Sheffield steam plant and the Government's interest in the Warrior

plant, and in addition give the Government 100,000 secondary horsepower for its uses at these nitrate plants.

Now, the Alabama Power Co., of course, is a power-producing company. We manufacture and sell power. We are not in the fertilizer business. We feel we are creating here a very important and vital situation, one that the Government can take advantage of, having power with the nitrate plant, and can interest those who wish to manufacture nitrates.

Of course this does not settle the question of who shall manufacture nitrates. We have all been told that the art of producing nitrates by artificial methods is changing from time to time. Only last Sunday there was a very interesting technical article as to the present state of the art in Germany. The Haber process is advancing there rapidly. It may, and undoubtedly will, come to this country. There will doubtless be other processes come to this country. The result of this, it seems to us, will be, Mr. Chairman, with power available and with these plants, there will be opportunity for first one and then another, as the Secretary of War more or less suggests, to undertake the manufacture of fertilizer and to undertake the manufacture of nitrates by any process or methods that commercial or other conditions for the moment may make available.

We only wish to say that since this whole question has been under discussion we have been approached by those interested in the manufacture of nitrates by some other methods, indicating a desire to go forward with the manufacture of nitrates in some way at these plants; people who are not now engaged in the fertilizer business, people who have not appeared before you at all, and who have no connection with any of the companies or interests which have come into the situation. I can not speak, of course, in the sense that these gentlemen are ready to do business on a basis or on what basis; I can only say that in my judgment, if the Government of the United States has power and a plant, it will find people who are ready and willing to go forward and manufacture nitrates.

It has been suggested here by one gentleman that secondary power could not be used for this purpose. I wish to go into that for a little while, Mr. Chairman, although I do not undertake to speak as an expert.

One gentleman who has appeared in that connection is Mr. Bower and the other is Mr. Swann. Mr. Swann, who is the president of the Federal Phosphorus Co., took the definite position, you will recall, that secondary power could be used, and that in the course of his own development he planned to use secondary power because that was cheaper, naturally, and it would be of interest to the public to use secondary power because in that way they would get this fertilizer product cheaper.

The other gentleman was Mr. Bower. Mr. Bower took the view, as I understood, that this secondary power could not be used. Now, Mr. Chairman, I do not want to take issue with Mr. Bower, but I would like to hand to the reporter Mr. Bower's own statements on this subject before a subcommittee of the House Committee on Appropriations February 15, 1921, found in the hearings on the sundry civil appropriation bill for 1922, page 119 et seq.

The substance of that is this (Mr. Magee was asking the questions):

"Mr. MAGEE. Then, if you are going to use the secondary power, there would be certain seasons when you could not operate the plant?

"Mr. BOWER. Yes; at certain seasons.

"Mr. MAGEE. And you would have to shut down and throw out of work 2,000 or 2,500 men?

"Mr. BOWER. No; you would not shut down altogether and throw out 2,500 or account of the drop in horsepower, because your horsepower requirements at that plant are at the carbide furnaces.

"Mr. MAGEE. You would have to cut down the number of your men?

"Mr. BOWER. Some of them, for a little while.

"Mr. MAGEE. What proportion would you cut down—50 per cent?

"Mr. BOWER. Oh, no, sir. It would simply be the men employed around the carbide furnaces, which would be closed temporarily only.

"Mr. MAGEE. You would have to disorganize your organization.

"Mr. BOWER. My thought would be this: You figure your total labor cost on cyanamid over the year, and you would run 10 months of the year and have a certain amount of labor cost, and then for two months suppose they were idle. It would pay to keep those men. It might add 50 to 75 cents a ton to your cost, but that would be so much cheaper——

"Mr. MAGEE. When you figure on using the secondary power, when you did not get that power, then you would not operate the plant?

"Mr. BOWER. Not the total plant; absolutely not."

This colloquy continued over a long period, the theory of the hearing being that if the Government would undertake to complete the development the Government would be in position to sell 100,000 primary power to public utilities operating in this section, leaving the secondary power for the operation of this nitrate plant, and that was the plan or theory advanced in these hearings by these gentlemen who were then interested in this project. I will take the liberty of handing these excerpts to the reporter for insertion in the record.

As I have said, Mr. Swann, of the Federal Phosphorus Co., has taken the position that the secondary power should be used. As to whether it can be used is a matter for this committee to determine, in its own judgment, after hearing those who are capable of advising the committee. Of course, if more power is needed, it is always there and can be purchased.

(The excerpts from the statement of Mr. Bower referred to above follow:)

"PRIMARY AND SECONDARY HORSEPOWER.

"Mr. MAGEE. Unless you use the primary and secondary horsepowers for this same purpose, how are you going to keep your men employed?

"Mr. BOWER. The power consumed in this plant is in the carbide furnace, using the secondary power, but the whole 100,000 secondary power is not used——

"Mr. MAGEE (interposing). Unless you use the primary power you can not run the year round.

"Mr. BOWER. That is the point.

"Mr. MAGEE. Can you?

"Mr. BOWER. No, sir; you can not run the total capacity of the plant.

"Mr. MAGEE. Then you would have to use steam?

"Mr. BOWER. Let me come to that a little later. Then the second statement of cumulative evidence——

"The CHAIRMAN (interposing). You may proceed to make your statement. I realize that there have been interruptions, and we will try not to ask questions until you have finished.

"Mr. BOWER. I do not object to questions at all.

"The CHAIRMAN. I understand.

"Mr. BOWER. That is the second thing that comes to our attention—the costs submitted by the War Department. Next we have the report of the British ministry of munitions of war, nitrogen products committee, final report, issued after the war was over. I will not put in the record the names, but this was the character of the members of the committee [exhibiting]. I am referring to page 133 of the report, which says:

"'In making the recommendation set out below the committee has been guided by the following salient facts, presumably developed by the previous study:

"'(*d*) Of these salient facts, combined nitrogen (cyanamid or ammonium sulphate)—the two products proposed to be made at this plant—"can be obtained by synthetic processes at a cost at the factory which is less than half the market price of combined nitrogen from other sources, prewar conditions being taken as the basis in each case."'

"As to this cumulative evidence from the third source—the British committee—the War Department has been appealed from, but I never have seen any figures that contradict the cost. Mr. Washburn himself, when he found that he was not going to get this plant for his own purposes, repudiated the statement made before the Committee on Agriculture of the House in the Senate Committee on Agriculture; he practically denied it.

"The CHAIRMAN. Permit me to interrupt you. The trouble about making a statement, where you are using all kinds of facts, and then waiting until you get through, is that what you have said has passed out of the minds of persons. I want to say that whether or not nitrogen can be manufactured in one country or another at a price that would permit its being used as fertilizer depends upon the cheapness of the power sold?

"Mr. BOWER. Surely.

"The CHAIRMAN. Take Norway, where the cost of power, as I recall, when you compute the investment in the plant, is a mere fraction of what it is going to cost at Muscle Shoals.

"Mr. BOWER. It is very low—not so much lower.

"The CHAIRMAN. When you bring in reports of that kind bearing upon power I can not myself bring my judgment to the conclusion that it is even cumulative—I do not believe that it has any bearing at all. You would first have to show me what a power plant that would produce 100,000 horsepower a year would cost, what the operation of it would cost, and then what you have read, it seems to me, would have some force.

"Mr. BOWER. We have Col. Cooper's estimate that the secondary power can sell for 1.2 mills.

"The CHAIRMAN. I understand in Norway the cost to produce hydroelectric power is from $2 to $12 per kilowatt year, whereas at Muscle Shoals it costs $50 a kilowatt year. So the comparison you have given is one that it seems to me of itself falls of its own weight.

"Mr. BOWER. Mr. Good, the cost of 1.2 mills per kilowatt hour, as figured by Col. Cooper and submitted to your committee—I know it was submitted to the Senate committee at the hearing, and I presume that the same statement was made here—1.2 mills for the secondary power at Muscle Shoals figured on 100 per cent power factor, I think it is $7.58 a horsepower year.

"Mr. MAGEE. I should like to get some idea of this if I can. Col. Cooper gave us a very clear statement of his position. If I understood him rightly, and I do not wish to make any statement which does not agree with the statement he gave, his position is this, that he is in favor of completing this project solely as a light and power proposition.

"Mr. BOWER. Yes, sir.

"Mr. MAGEE. He figured that it could cost so much to complete this project that it could be completed in from three to five years, and that at the end of 10 years more the Government could lease this plant for a light and power proposition without even distributing the power, but selling it at the plant?

"Mr. BOWER. Yes, sir.

"Mr. MAGEE. And get a rental of two and a half million dollars a year, or 5 per cent net on the amount of money which he estimated it would cost to complete this project. I would like to know if you concur in that view, or whether it is your idea the Government should complete this project solely as a fertilizer proposition.

"Mr. BOWER. No, sir; I do not claim so. Our thought is that with these possibilities, Mr. Magee, held out to us in the way of future production of fertilizer materials by the electric furnace——

"Mr. MAGEE (interposing). Then if you do not concur with him, as I understand, the statement shows that there can be produced here about 88,000 primary horsepower; is that right, Maj. Burns?

"Maj. BURNS. In round numbers Col. Cooper gave it as 100,000.

"Mr. MAGEE. Eighty-eight thousand, I think, is the amount stated in some hearing or approximately 100,000 primary horsepower. Do you propose in the fertilizer business to use this primary power?

"Mr. BOWER. No, sir; we would be ridiculous to come in and take power for $28 or whatever that figures out, with power available at $7.58.

"Mr. MAGEE. Then, if you are going to use the secondary power, there would be certain seasons when you could not operate the plant?

"Mr. BOWER. Yes; at certain seasons.

"Mr. MAGEE. And you would have to shut down and throw out of work 2,000 or 2,500 men?

"Mr. BOWER. No; you would not shut down altogether and throw out 2,500 on account of the drop in horsepower, because your horsepower requirements at that plant are at the carbide furnaces.

"Mr. MAGEE. You would have to cut down the number of your men?

"Mr. BOWER. Some of them, for a little while.

"Mr. MAGEE. What proportion would you cut down—50 per cent?

"Mr. BOWER. Oh, no, sir. It would simply be the men employed around the carbide furnaces, which would be closed temporarily only.

"Mr. MAGEE. You would have to disorganize your organization?

"Mr. BOWER. My thought would be this: You figure your total labor cost on cyanamid over the year, and you would run 10 months of the year and have a certain amount of labor cost, and then for two months they were idle. It would pay to keep those men. It might add 50 or 75 cents a ton to your cost, but that would be so much cheaper——

"Mr. MAGEE. When you figure on using the secondary power, when you did not get that power, then you would not operate the plant?

"Mr. BOWER. Not the total plant; absolutely not.

"The CHAIRMAN. Why, Mr. Bower, I am amazed that the farm bureaus are interested in building this plant to sell 100,000 primary horsepower to a British corporation.

"Mr. BOWER. Oh, no, sir.

"The CHAIRMAN. That is practically what this means. I supposed that you were coming here and wanting to use the primary horsepower to manufacture fertilizer.

"Mr. BOWER. If it does not cost too much. If it were not for that we would, but it is uneconomical to do that.

"The CHAIRMAN. Why, Col. Cooper, who is one of the best engineers in the world, said that, considering the erratic flow of the Tennessee River, it would be uneconomical to manufacture fertilizer at this plant if you sold all of your 100,000 primary horsepower.

"Mr. BOWER. And Col. Cooper stated before the Senate committee——

"The CHAIRMAN (interposing). On that matter you are putting your judgment as a representative of farmers against the judgment of one of the best hydroelectric engineers in the world.

"Mr. BOWER. I am not criticizing his standpoint as a hydroelectric engineer, but I wish to put in the hearing Col. Cooper's own statement.

"The CHAIRMAN. I can not understand why the farmers——

"Mr. BOWER (interposing). Just a moment, Mr. Chairman. Col. Cooper testified before the Senate committee: 'I have put it in on that basis. It is the basis I know something about. The fertilizer business I do not know anything about.'

"Mr. BYRNS. That is what he said here.

"The CHAIRMAN. Col. Cooper was here yesterday and testified positively that you would have to sell this primary horsepower at Muscle Shoals at the point of production, and that if you were going to use it for fertilizer you would have to use it at a basis of cost of 4.4 mills per kilowatt hour.

"Mr. BOWER. He said himself before the Senate committee that he knows nothing about the fertilizer business.

"COST OF SECONDARY POWER.

"The CHAIRMAN. And that if you sold it for commercial purposes, as you have proposed, then you could not use the secondary power and keep 2,000 or 2,500 men there at work.

"Mr. BOWER. Our thought has never been to use that big primary power unless it is cheap enough. We might agree with Col. Cooper that that is too valuable for fertilizer production purposes.

"Mr. BYRNS. Let me say that I think Col. Cooper and Gen. Taylor—and when the record is published it will be shown—made their statements in reply to hypothetical questions, assuming certain facts, put to them by the chairman, and both of them especially disclaimed any knowledge whatsoever of fertilizer or its manufacture.

"The CHAIRMAN. I can see how representatives of these power companies down there would take your attitude, but why a representative of a farmers' organization should take this attitude is something I can not understand.

"Mr. BOWER. Because we have got to get that cheap power to get our results.

"The CHAIRMAN. But look at that power as shown by plate No. 2. After you have taken 100,000 primary horsepower, as shown by the War Department's plates, which Col. Cooper states are correct, then your power falls off so rapidly that for more than 40 per cent of the year you will have to run a steam plant, which you say you can not run and produce cheap power.

"Mr. BOWER. Oh, not for 40 per cent of the year, Mr. Good.

"The CHAIRMAN. Yes; for 40 per cent of the year after you take off your primary power.

"Mr. BYRNS. Col. Cooper did not agree with that statement, Mr. Chairman. He said that that statement was based on only a few years, whereas he had taken 22 years.

"Mr. MAGEE. Col. Cooper absolutely stated, Mr. Byrns, as I understand, that you could not run this plant as a fertilizer plant unless you used the primary horsepower.

"Mr. BYRNS. Oh, no; I beg to differ with you. Col. Cooper especially disclaimed any information about that, and any reply he made was in response to hypothetical questions put to him by the chairman.

"Mr. MAGEE. Of course, his statement will show about that; but, as I understand, that was his absolute, unqualified statement.

"Mr. BYRNS. He further stated that he would work out and file with his statement the results of his investigations with reference to the flow of water covering a period of 22 years, and he especially disclaimed any knowledge of that plate to which the chairman has referred.

"Mr. BOWER. I say that we want cheap power, the secondary power, for the fertilizer production. Along that line, let me show you what the limitation is in this power. This is the testimony of Mr. Milton Whitney, Chief of the Bureau of Soils, before the Senate Agriculture Committee, with reference to the production of phosphate:

"'The first thing we tried was the electric furnace.'

"This was with reference to the production of phosphoric acid by some new method instead of using sulphuric acid.

"'We put in a mixture of phosphate rock, coke, and sand and fused it with electrodes and electric current. When this rock was in a molten condition, dense white fumes of phosphoric acids were given off, and reaction taking place and silicate of lime being formed, the phosphoric acid was set free. Those gases were put through a cottrell precipitator and we obtained phosphoric acid in a very pure form. We entered into negotiations with a commercial firm in Hoboken and made a run of six months, and at the end of that time we found that the cost of the current was so great that the cost of producing phosphoric acid by this method was about three-fourths of a cent more than by the sulphuric-acid method. We felt, therefore, that unless we could get cheap water power the electric method could not be used. As a matter of fact, our calculations were based upon electric power at $25 per horsepower per year. If you could get electric power for $6 to $10 per horsepower per year you could use an electric furnace and get phosphoric acid out cheaper than you can by the sulphuric-acid method.'

"Now, of course, if you are going to take Col. Cooper's position that you can not run this plan on anything except the selling price of primary power, then we have not got anything in this proposition, but we have never even thought about that.

"Mr. MAGEE. It looks to me that you can not make flesh of one and fowl of the other. If the Government is going into this business you have either got to make it an electric light and power proposition or you have got to make it a fertilizer proposition, and you can not get away from that conclusion.

"The CHAIRMAN. Mr. Bower, in making your computation, what did you figure you would have to get the secondary power for?

"Mr. BOWER. Well, I have here Mr. Whitney's statement. Of course, I have not made any computation on this. I am not capable of doing that; but Mr. Whitney's computation was that if he could get electric power for $6 or $10 per horsepower per year 'you could use an electric furnace and get phosphoric acid out cheaper than you can by the sulphuric-acid method.'

"Col. Cooper's cost of the secondary power is 1 and 2 mills, which, I think, figures out $7.58 per horsepower per year.

"Mr. MAGEE. His idea was, if you will read his statement, that you should sell all the power, not distribute it but sell it, the primary and secondary power, for use in the localities.

"Mr. BOWER. I would not be surprised if the Government adopted that method, that this secondary power possibly could bring a higher price for other purposes.

"The CHAIRMAN. Col. Cooper's figure, as I recall, was 1.3 mills per kilowatt hour, or perhaps it was 1.2 mills. As I read the hearings here the department has figured 0.75 mill.

"Mr. BOWER. Yes.

"The CHAIRMAN. So that if you had to have power at 0.75 mill, then the Government would be losing the difference between 0.75 mill and 1.2 mills, which Col. Cooper says the secondary power could be sold for.

"Mr. BOWER. And that would increase the cost of cyanamid, as I gave it, on page 95 referred to before, I think it would make it $23.04 instead of $21.97, by taking Col. Cooper's cost of the secondary power. That is the difference between 0.75 mill and 1.2 mills.

"The CHAIRMAN. Give that increase again.

"Mr. BOWER. It is on page 95. I simply multiplied 2,808 kilowatt hours at ¾ of a mill, which would figure out $2.10. At 1.2 mills. it would be 2,808 kilowatt

hours times one and two-tenths. I made that computation, but unfortunately I did not keep it. That would increase the price——

"The CHAIRMAN (interposing). About $1.25.

"Mr. BOWER. It would be $3.37 instead of $2.10, an increase of $1.27 a ton."

Mr. MARTIN. I would like to say just a word about the water power act. Our company is one of many, gentlemen of the committee, which is making developments under the water power act.

It is true that there are some 16,000,000 horsepower of applications pending, but applications for the development of well in excess of 1,000,000 horsepower have been granted and work is in progress on over 1,000,000 horsepower to be developed under the terms of the Federal water power act, in various parts of this country.

As you gentlemen know, of course, there is a limit of 50 years on the tenure of the license. That, coupled with one other very important feature, as I recall, were the two principal debatable questions before the Congress, the 50-year tenure plus the basis on which the development might be taken over at the end of the license period.

There was presented one of the most vital controversies in the whole history of the water-power development, and the position was taken by representatives of the Government and by the Congress that water power should be so developed that at the end of the 50-year period, the Government of the United States might take them over on paying what? Simply the actual, legitimate cost of development, not fair value, not just compensation, mind you, but just simply the actual, legitimate cost of the development described in the bill as the net investment in the project; that is, the net investment in the project, further limited that it should not exceed fair value. So that the Government has the right under this act to take over the project at the end of the 50-year period on refunding to the owner or developer simply his net investment, not exceeding fair value, which again is subject to deduction by such amount, if any, as the development has earned in excess of a fair return on his investment, in the meanwhile. And there is reserved further in the intervening 50 years, the right to the United States, to the State, or to any municipality to condemn and take over the development on the payment of just compensation, which involves, naturally, elements of value which are not included in the term "net investment."

Now, as to a possible renewal of the license at the end of 50 years, there is no preference to the licensee, which was one of the debatable questions, as you will recall, in Congress. If the United States does not take over the development then there arises the right of the State or municipality to take it over, and then there is that natural competition which would come between those who wished to succeed to that license over the then existing licensee, or others.

Now, as you gentlemen know the water power act undertakes to regulate the rates, service, and security issues of the licensee, first by the State or local authorities, and if none exist, by the Federal Water Power Commission, and in case the power enters into interstate commerce, then in case the regulating bodies of two or more States can not agree the question is referred to the Federal Water Power Commission.

Throughout the act there are many forms of regulations of every kind, as you gentlemen know, regulation and control. The question of extra profits, not only by actually taking any excess profits, and also by regulating rates, and many other features of which you are aware.

As to the development of water powers, public utilities are undertaking to proceed under this act, and others are undertaking to proceed under this act now. We are ready and willing to proceed under the terms of this act if Congress sees fit to permit the development to take place in this way. Now, Mr. Chairman, I am ready to submit myself to the committee for any questions the members may desire to ask.

Mr. MCKENZIE. Mr. Martin, were you connected with the Alabama Power Co. in the year 1916?

Mr. MARTIN. I was, Mr. McKenzie.

Mr. MCKENZIE. I take it you are familiar with the development and final enactment of the legislation known as section 124 of the national defense act?

Mr. MARTIN. Yes.

Mr. MCKENZIE. Were you present in Washington during the consideration of that legislation?

Mr. MARTIN. I do not think I was—I may have been present for a short while, but I do not recall. I did not have anything to do in any way with that legislation.

Mr. MCKENZIE. You were at least aware of the fact that at that time the supporters of that legislation were divided into two general classes, first, the members of Congress who ardently believed in national preparedness in time of peace, and who supported the legislation on the ground that it was going to give to the Government certain elements of national defense should we ever require the use of the same. The other class of supporters was made up of representatives in Congress who were not so particularly interested, perhaps, in the matter of national defense, and who believed that the agricultural interests of the country were entitled to some specific consideration, which they believed this legislation would give to them in supplying the fertilizer to make up for the depletion of the soil, etc. That was the situation in 1916, as I remember it. Is not that your recollection?

Mr. MARTIN. I think so, Mr. McKenzie; yes.

Mr. MCKENZIE. Then the legislation had two governmental purposes back of it, did it not, national defense and the encouragement of the manufacture of fertilizer for the benefit of the agricultural interests of the country.

Mr. MARTIN. That is true, Mr. McKenzie, I think.

Mr. MCKENZIE. And on that basis that legislation was enacted. You have called our attention this afternoon to a map which very clearly demonstrates to my mind that so far as a power proposition is concerned the Alabama Power Co. is splendidly located and undoubtedly has a brilliant future ahead of it, and if you can get control of Muscle Shoals and the power that may be generated there it will add to the expansion and success of your company.

Mr. MARTIN. And to the public welfare.

Mr. MCKENZIE. But I can not refrain from stating that as I view the matter it occurs to me that your contention and your proposed plan, while it would take into consideration the interests of the industrial people of that section of the country, and those living in the cities and towns of Alabama and Mississippi, and neighboring States, is wholly unmindful, it seems to me, of any suggestion that would be a benefit to the hundreds of thousands of people living in the homes scattered over that section of the country and known as agriculturists.

Now, the proposition that the Government entered upon, as we understand it, was having those people in mind, and not only having the people of Alabama, Mississippi, and the neighboring States in mind, but even those of the far West in putting into effect a plan that would propose to reduce the cost of agricultural products to the country, and which would benefit the people of the whole United States; is that not correct?

Mr. MARTIN. Yes.

Mr. MCKENZIE. And the other other proposition——

Mr. MARTIN (interposing). I want to qualify my answer to your question by saying that I can not altogether accept your hypothesis. I would like to answer you when you get through, Mr. McKenzie.

Mr. MCKENZIE. All right. That was the argument at that time, as I recall it, and the conclusion that Congress came to was the enactment of this legislation, that it would provide for two things, first, the national defense, in the interests of all the people; and second, that it would provide means whereby, perhaps, fertilizer could be produced at a cheaper cost to the farmer, and thereby indirectly benefit all the people of the United States. Now, time has passed on since that legislation provided that the Government should enter into this program of manufacture; the Government failed to do it. Now we are confronted with the situation of either the Government building and completing Dam No. 2 and proceeding with this as a governmental activity, or turning it over to some private interests, and that is what we have before us to-day to determine, if we can, as a committee. On that proposition we have a number of offers but we have yours before us at the present time. We have Mr. Ford's offer.

The CHAIRMAN. And we have just received one from Mr. Engstrum.

Mr. MCKENZIE. And we have just received this offer from Mr. Engstrum; and I think it is fair to say that in Mr. Ford's offer he does assume, at least in a way, to carry out the original intention of the Congress of the United States in connection with this matter. Whether he will or not is a debatable question that is not before us to discuss at his time. Your company comes forward with a proposition that is entirely different.

Mr. MARTIN. It is entirely different from Mr. Ford's.

Mr. McKENZIE. It is entirely different, as I understand it, and I presume as you understand it. Is that correct?

Mr. MARTIN. Well, it is different; yes. I think it is entirely different.

Mr. McKENZIE. Your proposition is more in the nature of a proposition to buy the property that the Government has to sell and dispose of certain rights without assuming any obligation to carry out the original intention of Congress so far as this proposition is concerned.

Mr. MARTIN. We do, Mr. McKenzie, in this way: We undertake to make a development to provide the Government with power making a water-power development to provide power for the operation of the plants. We undertake to provide the Government with power with which to operate the plants or which it may lease or sell to others to be used in the operation of a plant. The very purpose of building up this water power is to provide power for that purpose, and we propose to provide the Government with the power, and it is a very large volume of power, which we believe is a very large contribution to the program of fertilizer development.

Mr. McKENZIE. I think it is fair to state at this point that so far as Congress is concerned, or many of us, at least, when we entered upon this proposition that the governmental activities, so far as manufacturing is concerned, were to be only experimental, and that it was not to be a fixed policy of the Government to continue in the manufacturing business. As I understand your proposition, you are after the water power; it is a power proposition so far as your company is concerned, with the other matters incidental.

Mr. MARTIN. We propose to give the Government 100.000 horsepower, which prior to the present hearings was sufficient, in the judgment of those who were very much interested in this project.

Mr. McKENZIE. But that is a secondary proposition, so far as your proposition is concerned.

Mr. MARTIN. That is a secondary power proposition.

Mr. McKENZIE. That is a secondary proposition. You do certain things and you give to the Government 100,000 secondary horsepower.

Mr. MARTIN. It will be a charge on the development as to make it always available.

Mr. McKENZIE. In that way your offer differs from Mr. Ford's. Mr. Ford in his offer makes that the primary purpose. He does not say he will use secondary power, but he says he will use primary power; he does not say so in so many words, but that is what the proposition means, that he will proceed to change those plants and engage in the manufacture of nitrates to the amount of 110,000 tons of ammonium nitrate.

Mr. MARTIN. Mr. McKenzie, if you will permit, I want to ask you a question there.

Mr. McKENZIE. All right.

Mr. MARTIN. There is a difference between primary power and secondary power. Primary power has a market value; it is of more value than secondary power.

Mr. McKENZIE. I understand that.

Mr. MARTIN. Is anyone going to use primary power for a purpose such as the manufacture of fertilizer, or for any other industrial use, when he can put it to a greater use and to greater advantage? And, on the other hand, using secondary power produces the same result. Side by side we have the two classes of power; with either one you can produce the same result. As a matter of pure, true economics you are going to use the secondary power in the manufacture of fertilizer, because it can be done with secondary power; according to the people who have studied it, primary power can be put to other uses for which secondary power can not be used.

Mr. McKENZIE. I presume your statement is correct, but if a man has an option to buy, and in entering into a contract to use this power he had to do certain things, he would probably use both primary and secondary power, or use primary power entirely at certain times and other times secondary power.

Mr. MARTIN. Of course, there is no agreement that any particular power will be used, or what power, in other proposals.

Mr. McKENZIE. Let us see what you offer to do in connection with this offer of yours. You offer to buy the Warrior plant. The cost of that was, as I have it, $4,676,000, including the plant and transmission line. You desire to buy that?

Mr. MARTIN. Yes, sir.

Mr. McKENZIE. Then you desire to buy the steam plant at No. 2, which cost $12,326,392; you want to buy that. Then you want to take over the dam, on

which $17,000,000 have been expended. That makes $34,200,392, at war cost. If you deduct 40 per cent, which I spoke about yesterday, for war-time discounts, that will leave $20.401,434 worth of property as a going value, would it not?

Mr. MARTIN. You are coming down to what you say is the reproduction cost.

Mr. McKENZIE. Yes. Taking off 40 per cent from the whole cost.

Mr. MARTIN. Assuming that the entire development could have been produced for 60 per cent up to date, that it would require 60 per cent of the original cost to produce the power development—I have not compared your figures.

Mr. McKENZIE. You are buying this property as a going property. The steam plant is certainly in condition to be operated.

Mr. MARTIN. It is now; yes.

Mr. McKENZIE. The Government's addition to your own plant is in good condition?

Mr. MARTIN. Of course, the water-power development, in so far as it has progressed is not going; it is just standing idle until it is completed.

Mr. McKENZIE. I am speaking of these plants.

Mr. MARTIN. Yes. The plants——

Mr. McKENZIE (interposing). Then you would get the advantage of the $17,000,000 expended on the dam.

Mr. MARTIN. That is quite true.

Mr. McKENZIE. Then, that would make $20,401,434 of what we might consider as actual, fair value, would it not? We could consider it in that way, could we not?

Mr. MARTIN. We will assume that for the purpose of your question.

Mr. McKENZIE. For that you offer to pay the Government $5,000,000, less whatever it may cost to build the locks at Dam No. 2, which you want to deduct from the $5,000,000, as I understand it. If I am wrong, I want to be corrected on that.

Mr. MARTIN. And then the 100,000 horsepower.

Mr. McKENZIE. I understand; I will come to that in a moment. But for the $20,401,434 worth of property, as a fair value, you propose to give the Government $5,000,000, and then you propose to deduct from the $5,000,000 whatever the lock may cost; and the Army engineers, as I understand it, estimate the cost of that lock to be $4,500,000.

Mr. MARTIN. No; my understanding is that the Secretary of War estimates it to be $2,500,000.

Mr. McKENZIE. That is the Secretary of War's statement, but the engineers have estimated the cost of the lock as $4,500,000.

Mr. MARTIN. I have not seen any such figures, and I believe you find the figures of $4,500,000 include the locks at two developments.

Mr. McKENZIE. I will not stop to argue that now.

Mr. FIELDS. Col. Cooper stated that.

Mr. MARTIN. I am not prepared to say it would not cost that at the two developments, at Locks 2 and 3, but I think you will find that the cost of the locks at Dam No. 2 would be $2,500,000.

Mr. McKENZIE. In case it should cost $4,500.000, then you would pay to the Government the sum of $500,000.

Mr. MARTIN. No; we pay this actual money that goes into the locks. But, of course, whether the locks cost $2,000,000 or $3,000,000 or $4,000,000, we propose to pay $5,000.000 to the Government.

Mr. McKENZIE. If I read your proposition correctly, you deduct that amount.

Mr. MARTIN. That is in effect the payment to the Government, though.

Mr. McKENZIE. Now, then, in addition to that, you propose to give to the Government what else?

Mr. MARTIN. 100,000 horsepower.

Mr. McKENZIE. Secondary horsepower?

Mr. MARTIN. Well, 100,000 secondary horsepower and power for the operation of the locks, and to maintain and operate the dam, the gates, and the powerhouse during the license period.

Mr. McKENZIE. And to furnish power necessary to do that?

Mr. MARTIN. For operating the locks, yes. That is quite incidental, or quite small, but those are considerations which are also involved.

Mr. McKENZIE. What do you say the primary power is at Dam No. 1?

Mr. MARTIN. You mean Dam No. 2?

Mr. McKENZIE. Yes; Dam No. 2.

Mr. MARTIN. My chief engineer says that it is somewhere between 80,000 and 100,000 horsepower.

Mr. MCKENZIE. In what portion of the year do you estimate under that statement there would be 100,000 horsepower to turn over to the Government?

Mr. MARTIN. Approximately 82 per cent of the time the power will be available, according to the stream-flow records which have been calculated for a period of 40 years.

Mr. MCKENZIE. Getting right back to your plan, you propose to pay the amount of money which has been stated for the property which I have mentioned, and to give the Government, when you have it, 100,000 secondary horsepower, with which the Government will be permitted to operate the nitrate plant, or any lessee of the Government will be permitted to operate it?

Mr. MARTIN. That is correct.

Mr. MCKENZIE. And the 100,000 primary horsepower you would sell to the industrial interests of the surrounding country?

Mr. MARTIN. For lighting, power, and industrial purposes; yes.

Mr. MCKENZIE. As a business man, Mr. Martin, could you be induced to take out a lease to operate that nitrate plant under those conditions?

Mr. MARTIN. I have stated to you that it has been frequently stated before other committees that this very class of secondary power can be used. Mr. Swann of the Federal Phosphorus Co. is prepared to undertake the developments in his own particular work, using secondary power. Mr. Bower has testified before another committee of Congress that this very class of secondary power can be used.

Mr. MCKENZIE. Then you think that the Government, with those two splendid plants standing there, on which it has spent so many, many millions of dollars, would be getting a good bargain to simply retain them, and then await the pleasure of the Alabama Power Co. to give them some secondary horsepower with which they might operate? You think that is a fair proposition.

Mr. MARTIN. Not in the way you have expressed it, Mr. McKenzie.

Mr. MCKENZIE. Is not that about the fact?

Mr. MARTIN. It is not awaiting our pleasure; it is awaiting the completion of this development, and we simply propose to do that which those interested in this development have from the beginnnig down to the past few weeks insisted should be done, namely, that this very class of secondary power referred to in our proposition, should be used in the manufacture of fertilizer.

Mr. MCKENZIE. I will say this, if the Government sees fit to go into a proposition of this kind, I would be the last man to ever criticize it afterwards. But so far as my own point of view on the matter is concerned, I want to say that I can not see where the Government would get off under such a proposition as this. It seems to me it would not be a very profitable deal for the Government, if it ever had any idea of manufacturing anything.

But I do not want to take up the time of the committee any further, so I will call on Mr. Greene.

Mr. GREENE. Mr. Martin, you are proceeding on the general theory that if there is a public advantage in this thing at all, it is probably more largely to be through the experience in the dispersion of power through a great area and for heating and lighting and industrial purposes than to be concentrated at Muscle Shoals for the manufacture of fertilizer. I am trying to get at your idea about it. In other words, your idea of public policy—because, if you will permit me we are more likely concerned here with public policy first than with the varying details of the proposition—is as I have stated.

Mr. MARTIN. Let me suggest this: It has been stated in these hearings within the past week or two that 100,000 horsepower would be used as a maximum in the manufacture of fertilizer at this development. The plans which are being considered provide that the Government—that is, other plans—shall finance and complete a total of 850,000 horsepower, 100,000 primary power, and 750,000 secondary horsepower. It has never been suggested here that that 750,000 horsepower be devoted to the fertilizer business. It has been my understanding from these hearings, and it is my understanding now, that a very small part of this power development of 850,000 horsepower would be used in the manufacture of fertilizer, and therefore I believe that this plan of ours makes available for the manufacture of fertilizer that power and all the power which by any other plan will be used in the manufacture of fertilizer.

Mr. GREENE. That is your interpretation of the comparison of the two propositions, Mr. Ford's and yours. But we are assuming—and I hope altogether with confidence—that as citizens, either members of the committee or witnesses before it, we must approach this proposition with the idea of its effect as a public policy for the future.

Mr. MARTIN. That is quite correct.

Mr. GREENE. Regardless of the private interests of any people who make proposition to us, anticipated or real. You hold, therefore, as I understand it, that this Muscle Shoals power might, consistent with good business and economics, be employed first as a preliminary to the distribution of power throughout this great area for home lighting, for incidental municipal uses, and for industrial purposes, and still reserve power at Muscle Shoals that could be employed in the first instance for fertilizer production, and, as a matter of public policy, it is better so to distribute that power than to concentrate in one hand at Muscle Shoals, ostensibly for fertilizer purposes.

Mr. MARTIN. I think I am correct in this statement, that in the manufacture of fertilizer you have to bear in mind that when manufactured it must be transported to the locality of use. It has never been suggested here that at Muscle Shoals or at Keokuk or in the West, all fertilizer to be used in this country should be manufactured. To the contrary, it has been suggested to you that you have to get down to this—that is, manufacture all the fertilizer at different points, so that the question of freight rates to the points of use will be equalized. You could not manufacture all the fertilizer at one place and ship it throughout the United States, because by the time you get it there the freight charges would be prohibitive. That is my understanding or suggestion, first.

In the next place, if power is going to be used in the manufacture of fertilizer, a limited amount of power is going to be used, a certain amount is going to be used, and no more. Therefore we present a plan by which this limited amount of power is available and can be used, and at the same time the balance of that power may be devoted to public use, and any class of public use that may arise, industrial or otherwise, here in this locality or in other localities.

Mr. GREENE. You are basing your idea, then, on the amount of power that may be appropriated to the fertilizer production upon the evident intent of section 124 of the national defense act, which clearly sets out that the Government did not then intend to set up a fertilizer manufacturing proposition for distribution purposes, as I understand it; because that act starts off with this introductory phrase:

"The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products by water power or any other power, as in his judgment is the best and cheapest to use."

You are basing it on the idea that this law did not contemplate the establishment at Muscle Shoals of a great, centralized fertilizer-producing factory, but an experimental station.

Mr. MARTIN. Probably both; but simply as a matter of pure economics I suggest to you that you can not build a single plant at any place in the United States to supply all the fertilizer needs.

Mr. GREENE. What is your interpretation of that law? What was the intention there in the first place?

Mr. MARTIN. As to establishing a plant?

Mr. GREENE. Yes.

Mr. MARTIN. It is very evident that a plant was to be established which would be available for the manufacture of munitions of war and fertilizer.

Mr. GREENE. Did you understand it was to be a commercial proposition or that it was to be a matter of investigation and experiment?

Mr. MARTIN. In the law?

Mr. GREENE. Yes.

Mr. MARTIN. I see what your idea is. I did not understand the point you were making at first.

Mr. GREENE. It would make a great difference in the amount of water power to be consumed, or that the Government was under any obligation to employ there. The interpretation of that act would make a great difference as to that

proposition, as to whether you could separate the power fairly, so as to comply with the terms of the act, and at the same time employ the great residue of that power for other purposes equally useful.

Mr. MARTIN. As a matter of engineering, or a business matter, there would be no difficulty in defining the status, practically, as between primary and secondary power. That is a matter that can be worked out as between the different uses, as to the broad question of whether the entire development should be devoted to fertilizer—of course, if that is the case——

Mr. GREENE (interposing). What I am getting to is this: It seems to me that possibly there is a confusion occasionally in the application of the argument, because Mr. Henry Ford has introduced the idea of the establishment of a great fertilizer factory, with general distribution, and constant reference is being made to this act, which I never read in that way. It was introduced into the law on the pretext that it would be a demonstration and an experiment proposition and an investigating thing. This site was not even established at Muscle Shoals at that time.

Mr. MARTIN. If it is merely an experimental station, of course, 100,000 horsepower is a great deal more than will ever be needed for an experimental station. If that is the intent of the law, it will be easily complied with. On the other hand, if there is to be a plant there to supply those things which the plant should supply, having regard to the question of railroad freight rates again, the 100,000 horsepower would, as I understand the subject, be sufficient.

Mr. GREENE. Then we are to understand that you first differ from Mr. Henry Ford's proposition on the theory that you can employ the greater part of this power for better uses for the general public benefit than to concentrate its use more or less locally in the production of fertilizer or in the production of such things as he may need for his automobile business? That is your first proposition?

Mr. MARTIN. I say if part of this power is to be used industrially, then it is better for it to be distributed to the public at large by a public-service company than to confine it to a single, private use.

Mr. GREENE. Passing to the next proposition—the economics of the thing—wherein do you maintain that your proposition, in money and finance, is more to the advantage of the Government than Mr. Ford's proposition? You have covered, of course, discursively, that same thing, but if you can concentrate it in something that we can remember, it will help us very much, because we will have to make these comparisons later ourselves.

Mr. MARTIN. First of all, it is a question of how much money the Government will have to appropriate first and last for these two power developments. On the one hand, it has been variously estimated that $50,000,000 of capital, plus whatever interest there may be during construction, will increase that amount. None of the money is to be appropriated under the plan we propose. That is one advantage.

In the second place, the Government will dispose of these two nitrate plants, including the steam plant and equipment, for $5,000,000, under another offer, whereas we suggest that the Government sell simply the steam plant and equipment and retain the nitrate plants. I believe some one stated that the two nitrate plants represent some $75,000,000 of Government investment. That the Government retains, under our proposition. In addition, we have the Government's investment of $17,000,000 presently made in the incomplete Wilson Dam. No one has suggested that the Government get any return upon that $17,000,000, except by way of an annual amortization fund. We propose to give the Government this 100,000 horsepower, plus $5,000,000 for the work that has been done at the Wilson Dam and the steam plant and equipment, and to finance the Wilson Dam to its completion. The obligation to finance this property to its completion, the obligation to pay $5,000,000, the obligation to deliver the Government 100,000 horsepower—that is included in our offer—and in addition to that, as a fourth contribution to this situation, we undertake to maintain the dams and the gates throughout the 50-year lease period. All those things you have got to look to.

There has been testimony brought to you here, I believe, which is already in the record, as to the obligation the Government would assume under another offer for the maintenance of the dams and gates. That is a very substantial obligation, which I believe the Secretary of War referred to in his letter in regard to the maintenance of the dams and gates throughout the 50-year period. We undertake to meet that obligation. Under another offer the Government meets that except for certain annual payments fixed in amount, and whatever

balance there may be by way of maintenance of those two items the Government is to take care of. Our obligation runs for 50 years, and under another proposal the obligations of the Government and of the licensee or purchaser would run for 100 years.

Mr. GREENE. That is your statement of the advantages you urge in your proposition over Mr. Ford's proposition?

Mr. MARTIN. Of course, there is the great question of the right of recapture at the end of 50 years on the payment of the net investment. No one can to-day calculate the value of a water power 50 years from now. Where there is no right of recapture, where it runs for 100 years or more, in perpetuity, who is there to-day who can calculate the capital value of that lease-hold or property right at the end of 50 years.

On the other hand, whatever net dollars go into this project in the intervening 50 years, that is the basis on which the Government may take it over less any return there might be in excess of a fair return in the public service. It is not likely there will be anything in excess of a fair return. I do not see how there can be anything in excess of a fair return because the Government or public authorities regulate the rates on the one hand and the Government will take by exappropriation annually anything over a fair return under the present rules and regulations of the Federal Water Power Commission.

Mr. GREENE. Then that presents in a more or less succinct manner your contention in regard to the advantages of your proposal over Mr. Ford's proposal.

Mr. MARTIN. That presents the viewpoint of our proposition.

There is one other thing, Mr. Greene: The Federal water power act contains a provision refered to by the Secretary of War with regard to taking over and operating water-power projects during time of war. That is a very broad provision which the Secretary refers to in the water power act, and it is broader in its terms than the provision contained in the proposition of Mr. Ford—very much broader. That provision and its full scope, by virtue of the water power act, is read into and becomes a part of every license issued under the terms of that act.

Mr. GREENE. I wanted the record to show about what you hold to be the advantages of your offer.

Mr. HULL. Your proposition is for Dam No. 2?

Mr. MARTIN. Yes.

Mr. HULL. You do not propose to develop Dam No. 3 or Dam No. 1?

Mr. MARTIN. Not now. When industrial or commercial conditions require power from Dam No. 3, it can be developed.

Mr. HULL. If you develop Dam No. 3, you would increase the development at Dam No. 2?

Mr. MARTIN. We would increase the power at Dam No. 2.

Mr. HULL. Yes; you would increase the power to some extent—the primary power at Dam No. 2—as I understand it.

Mr. MARTIN. To some extent; but you will remember that Dam No. 3 is not a storage development.

Mr. HULL. It would, however, to some extent?

Mr. MARTIN. It will help; still, simply as a matter of regulation——

Mr. HULL (interposing). Would the development you propose make the river navigable?

Mr. MARTIN. No, sir; it will, however, make the river navigable to the extent of the pool created by Dam No. 2.

Mr. HULL. Putting in the lock would be useless without a further development at Dam No. 3 and Dam No. 1?

Mr. MARTIN. Further development at Dam No. 3; then, of course, there are, I believe, five or six other dams to be built after you built Dam No. 3, between that point and Hales Bar before the development for navigation on the river is complete. This is one end of that proposition.

Mr. HULL. If we accepted your proposition there would be no positive assurance that in the future we would have nitrates for war purposes, because you do not propose to maintain plant No. 2 in condition to produce nitrates?

Mr. MARTIN. No; we do not undertake any obligations with respect to plant No. 2; but we undertake to give the Government power and money.

Mr. HULL. You propose to give the Government secondary power?

Mr. MARTIN. Yes.

Mr. HULL. At plant No. 2?

Mr. MARTIN. Yes.

Mr. HULL. Now, there are several different kinds of secondary power, as I understand this proposition, especially in a flow of water as variable as that

in the Tennessee River. Secondary power might be very inefficient or it might be very good power. What is there to assure us that we will get first-class secondary power?

Mr. MARTIN. The contract you make would insure it.

Mr. HULL. You propose to give us first-class secondary power?

Mr. MARTIN. Yes, sir; that is the stipulation. Our offer says, "This power to be the second 100,000 horsepower at any time available from the normal flow of the river." That is the second 100,000.

Mr. HULL. The second 100,000?

Mr. MARTIN. Yes; it is a matter of engineering; that is ascertainable.

Mr. HULL. Is there any mention of plant No. 1 in your proposition?

Mr. MARTIN. No, sir.

Mr. HULL. That you do not propose to buy at all?

Mr. MARTIN. No, sir.

Mr. HULL. That would remain in the possession of the Government?

Mr. MARTIN. Yes, sir.

Mr. MILLER. By the acquisition of the Muscle Shoals property, as you have explained it—that is, the Muscle Shoals hydroelectric power—the Alabama Power Co. would have almost the entire hydroelectric output of the southeast portion of the United States; that is the idea you are proceeding on?

Mr. MARTIN. No; there are a great many developments in other States, other sections of the South, which we have no interest in.

Mr. MILLER. I understood from your preliminary statement that in connection with these other projects you had surveyed and hooked them up with the Muscle Shoals proposition?

Mr. MARTIN. Yes; in Alabama.

Mr. MILLER. In Alabama?

Mr. MARTIN. Yes. It was our suggestion that this Tallapoosa River project, which has been associated with this Muscle Shoals proposition in our own plans, can be developed as a storage proposition, and in connection with this property, produce power in greater volume than Muscle Shoals can produce alone. Of course the Tallapoosa River project as a storage project is not economical; it is not of value; it can not be made of value except as a storage development in connection with some large development. That is the plan we are proceeding on.

Mr. MILLER. Then, generally speaking, it is your plan to use the power plant at nitrate plant No. 2 as a reserve station?

Mr. MARTIN. The steam plant?

Mr. MILLER. The steam plant.

Mr. MARTIN. As a further reserve station.

Mr. MILLER. In connection with the Warrior steam plant; that is what you have in mind?

Mr. MARTIN. In connection with the entire development?

Mr. MILLER. Your proposition leaves the entire property of the Government's enterprise at Muscle Shoals in the hands of the United States; that is, the title to it—with the exception of the steam plant at nitrate plant No. 2 and the Warrior steam plant, whatever interest you will have there.

Mr. MARTIN. Yes; and the Wilson Dam development, of course.

Mr. MILLER. To develop this Dam No. 2 under the Federal water power act, and subject to all the provisions thereof?

Mr. MARTIN. Yes.

Mr. MILLER. I notice a little provision here in your bid, Mr. Martin. I do not want to be technical in connection with the matter, at all, but in the second clause on page 3 of the Secretary of War's report—that is, the second paragraph of your offer—you provide, "To furnish free to the Government, or anyone it may designate, from the hydro power plant 100,000 hoursepower as required for the production of fertilizers and munitions of war and for research in connection therewith; and if, due to changes in the art, this use of such 100 000 horsepower is discontinued by the Government, the Alabama Power Co. to purchase and pay for same in accordance with a schedule to be set forth in the license. This power to be the second 100,000 horsepower at any time available from the normal flow of the river."

Now, suppose a system should be organized there and installed at nitrate plant No. 2 by which the maximum production of that plant may be put out with less than 100,000 horsepower?

Mr. MARTIN. That is quite likely.

Mr. MILLER. Suppose that in the future—and we are looking far into the future in connection with this proposition—the manufacture of fertilizer should so go forward in its evolutionary stage that it would become necessary and might be desirable to greatly extend the present nitrate plant No. 2 in its annual producing capacity of fertilizer. Would that 100,000 horsepower be available for any such expansion that the United States Government may make, or is it limited to the present capacity of the present plant?

Mr. MARTIN. I did not have in view any limitation of that kind.

Mr. MILLER. I know, and I do not want to be over nice in these things; but I wondered what was in your mind, and would it cover a contingency of that character?

Mr. MARTIN. Of course the Government would have it, and the contract in connection with this whole matter would undoubtedly cover it.

Mr. MILLER. In other words, 100,000 horsepower would be available for such uses as the Government desired to put it to. Suppose the Government wanted to establish an arsenal there, or some other industry entirely apart from the manufacture of ammonium nitrate. Would the 100,000 horsepower you agree to furnish free of charge be available for such governmental uses and purposes as the Government might desire to establish there?

Mr. MARTIN. We had in mind that, in general, the production of fertilizer and munitions of war would be carried on there; whatever that might be is a matter we have made no point about.

Mr. MILLER. My attention was attracted to this language that I read to you, and I did not know whether that was a limitation of the use of the horsepower.

Mr. MARTIN. No, sir; we simply meant to say that if the Government did not use this power——

Mr. MILLER (interposing). That is what I am getting at.

Mr. MARTIN. Then we would purchase it, whether due to changes in the art or any other reason, if the Government wants to sell it.

Mr. MILLER. So you propose to furnish the Government 100,000 horsepower for such purposes as the Government needs it for, and if the Government does not use all of it, then you would purchase what the Government does not use?

Mr. MARTIN. Yes; we had in mind that, in a general way, these purposes would be governmental purposes. We did not think the Government would go into the business of selling this power; but we would hold the power available for the Government for these general purposes.

Mr. MILLER. Your proposition for the Muscle Shoals enterprise—that is, the operation of the hydroelectric end of it under the Federal water power act—is really attractive; it conforms to the governmental policy.

Mr. MARTIN. We feel that it does.

Mr. MILLER. That portion of it; and I want to say the proposition is very tersely, comprehensively, and briefly put forward. You, of course, are to receive the benefit of what money the Government has already put in dam No. 2.

Mr. MARTIN. Yes; that goes as a part of the project.

Mr. MILLER. And give a free and full title to it?

Mr. MARTIN. Yes.

Mr. MILLER. Would that fund that is in there now cut any figure in the recapture clause, or would it be simply on your investment?

Mr. MARTIN. On our investment.

Mr. MILLER. It would cut no figure in the recapture clause?

Mr. MARTIN. I do not see how it would. It is a matter of bookkeeping. The Government, through the Federal Water Power Commission, keeps books against us in all these matters now, according to a prescribed method, and our net investment is ascertainable at any time.

Mr. MILLER. This proposition of yours is to build an enterprise under the Federal water power act within a reasonable length of time. What have your engineers advised you would be the probable length of time, if there has been any such advice given to you?

Mr. MARTIN. From 30 to 36 months.

Mr. MILLER. You are figuring then on the completion of the entire proposition within three years, or at least by the end of three years' time?

Mr. MARTIN. Yes; installing 240,000 horsepower. Of course, so far as subsequent installations are concerned, the Federal water power act provides that installations shall be made from time to time in any project to meet the power demands. We simply suggest that the power demands for that period will be at least 240,000 horsepower, and we assume that obligation. There may be

much more as the work progresses, in which case we would go forward and meet whatever status the public demand requires.

Mr. MILLER. Two hundred and forty thousand horsepower includes both primary and secondary power?

Mr. MARTIN. Yes.

Mr. MILLER. To generate 240,000 horsepower, how high, according to the present plans and specifications would the dam be constructed?

Mr. MARTIN. Ninety-two feet.

Mr. MILLER. The completed dam is a 94½-foot fall of water?

Mr. MARTIN. Whatever the completed dam is; whatever the present levels may require.

Mr. MILLER. Is it your idea to go ahead and complete this dam?

Mr. MARTIN. Yes.

Mr. MILLER. To complete it entirely?

Mr. MARTIN. Yes.

Mr. MILLER. According to the plans that now exist there for it?

Mr. MARTIN. Yes.

Mr. MILLER. With a 94½-foot fall of water?

Mr. MARTIN. Yes. Under the Federal water power act rules and regulations no development is made on a navigable river except according to plans approved by the Chief of Engineers, the Secretary of War, and the Federal Power Commission. Therefore, of course, we assume the obligation to complete this development according to the plans of the engineering department of the War Department, the Secretary of War, and the Federal Power Commission.

Mr. MILLER. Then your proposition is to complete the dam under the specifications now existing in the War Department?

Mr. MARTIN. Yes, sir.

Mr. MILLER. On which work has progressed about 30 per cent?

Mr. MARTIN. Yes.

Mr. MILLER. When you complete that dam it will generate much more than 240,000 horsepower, will it not?

Mr. MARTIN. There will be the water there, but we will not necessarily install large wheels in the power house.

Mr. MILLER. I see. You will complete the dam, but the machinery you will install will depend upon the demand for the power?

Mr. MARTIN. Yes, sir. We have to provide at once for all the equipment. You have to create your foundations for your machinery and for the entire layout; you have to make provisions for those things. We do not necessarily install the entire equipment at one time. We will install equipment and machinery in the space left for the additional units when the additional business requires.

Mr. MILLER. By the completion of the dam the power will be available any time you desire to expand the power-house equipment?

Mr. MARTIN. Yes, sir.

(Thereupon the committee adjourned to meet to-morrow, Wednesday, March 1, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Wednesday, March 1, 1922.

The committee met at 10.30 o'clock a. m., Hon. John C. McKenzie (acting chairman) presiding.

ADDITIONAL STATEMENT OF HON. S. HUBERT DENT, JR., ATTORNEY FOR THE ALABAMA POWER CO.

Mr. DENT. Mr. Chairman and gentlemen of the committee, I feel like apologizing to the committee for taking up any more of its time in discussing the legal aspects of the rights of the Alabama Power Co. in connection with the Gorgas plant, and would not ask the committee to indulge me again, were it not for the fact that my friend, Mr. Oliver, of Alabama, I understand, addressed the committee on the legal aspects of that proposition and announced, to my mind, some rather startling propositions of law.

In the first place, I understand he raises the question that under the act of July 9, 1918, the contract must be made by the heads of the various departments, and that the heads of the departments are the Cabinet officers.

Well, I will not take issue with him on that proposition, and if the committee takes that view of the matter we would ask the further indulgence of the committee to introduce the testimony of Maj. Booten, of the Ordnance Department, who has the records of that department in reference to Ordnance contracts. I interviewed Maj. Booten yesterday afternoon at his office and saw the records, and his testimony will disclose that the Secretary of War authorized Maj. Gen. Williams, Chief of Ordnance, to make contracts in his department in the name of the Secretary and to nominate officers in his department as contracting officers, and that Lieut. Col. William Williams, who signed this contract, was one of the contracting officers named by Maj. Gen. Williams, Chief of Ordnance. I understand that Maj. Booten is ready to come before the committee with these records at any time that suits the convenience of the committee. So the facts that will be disclosed by Maj. Booten's testimony will completely cover the argument of Mr. Oliver that the head of the department means the Cabinet officer.

Mr. MCKENZIE. If I understand you, it is your contention that one of the heads of departments, such as a Cabinet officer, would have the power under the law to redelegate authority delegated to him by Congress?

Mr. DENT. Surely.

Mr. MCKENZIE. In a matter of this kind?

Mr. DENT. Yes; in view of the language of the act, which does not say it must be done by the head of the department, but through the heads of the departments, and that otherwise any other construction would render the act impractical, because it would have been a matter of physical impossibility for the Secretary of War himself to have signed every war contract that was made. That would have been absurd on its face.

Now, so much for that proposition, which will be answered, as I stated, by the facts.

Mr. FISHER. I would like to ask you a question before you branch off from that point.

Mr. DENT. All right, Mr. Fisher.

Mr. FISHER. I would like to know who was the lawyer for the Alabama Power Co. through all these proceedings leading up to the signing of the contract on the day of the fake announcement of the armistice. We had testimony from the Air Nitrates Corporation that the lawyer representing them—who is now dead—reached the conclusion that they could not take an option; that it would be illegal to take an option from the Government to sell after the war; and that they consulted other counsel, but that that counsel was now out of the city, and I would like to know whether or not there was a law firm or any other lawyer, other than Mr. Martin himself, who was negotiating for the Alabama Power Co. in drafting the terms of the contract.

Mr. DENT. Of course, I could not answer that myself, Mr. Fisher, personally, because I was not connected with the Alabama Power Co. at that time, but Mr. Martin can.

Mr. FISHER. Then I will ask Mr. Martin when he goes on.

Mr. DENT. As I understand Mr. Oliver's argument, he contends that when Congress by legislative action declares that certain property is necessary for a public use, that that is binding upon the courts and that the courts can not go behind that declaration of Congress. That is his first and his main proposition. Second, that the head of a department must be a Cabinet officer, which I have already answered. Third, that the right to sell does not include the right to postpone the date of the sale or to agree to arbitration. Fourth, that the act of July 9, 1918, does not apply to property to be used subsequent to the war, whatever that means. And fifth, that the proviso to the act of July 9, 1918, which he quotes in his remarks, expired by its own limitation a few months after the passage of the act, by reason of the fact that the Secretary of War was required to make a report to Congress.

I believe that those are the main and principal propositions that my friend, Mr. Oliver, asserted before the committee on yesterday.

It is rather difficult, Mr. Chairman, and I consider it absolutely unnecessary, to go into any extended argument before this committee on the right of Congress to declare certain property necessary and essential for public use and bind the courts. The fact is I have not had a chance to run down the authorities myself, but even if I had them I would not weary this committee with a long

citation of authorities upon the subject, but I will call the attention of the committee to one case which occurs to me, because I have read it recently, having a condemnation case now pending in the Federal court at Montgomery, and that is the case of the United States *v.* The Gettysburg Electric Railroad Co., in 160, U. S.

Congress a number of years ago, in one of the appropriation bills, provided an appropriation and enacted legislation as a rider on the bill, providing for the establishment of Gettysburg Park, the establishment of the battle lines of the Union and Confederate forces there and the marking of the grounds and the preservation of the battlefield as a Government park.

The Gettysburg Electric Railroad Co. had certain rights of way in that property and they contested the power of Congress to take away their rights. The case went to the Supreme Court of the United States. and in a very elaborate opinion by Mr. Justice Peckham, which was the unanimous opinion of the court, the court held that it was a public use and as a matter of law and as a matter of fact Congress had the right to do this because the dedication of this battlefield, which was the deciding battle, perhaps, of the Civil War, was a public use and was a matter that Congress certainly was authorized to hand down to posterity as a lesson.

Now, just let me for a moment call your attention to one or two paragraphs in this opinion which absolutely settle the law just exactly to the contrary of what my friend Mr. Oliver contended. Mr. Justice Peckham said:

"The really important question to be determined in this proceeding is whether the use to which the petitioner desires to put the land described in the petition is that kind of public use for which the Government of the United States is authorized to condemn land. It has authority to do so whenever it is necessary or appropriate to use the land in the execution of any of the powers granted to it by the Constitution. The question then is, is the proposed use to which the land is to be put a public use within this limitation. In these acts of Congress and in the joint resolution the intended use of this land is plainly set forth. It is stated in the second volume of Judge Dillon's work on municipal corporations that when the legislature has declared the use or purpose to be a public one, its judgment will be respected by the court unless the use be palpably without reasonable foundation."

This opinion conclusively shows that Congress can not arbitrarily declare that certain property is necessary for a public use and bind the courts by that declaration.

Why, otherwise, Mr. Chairman, no man's property would be protected; the owner of property would never have his day in court if the legislative body can, by a mere declaration of its own, take a man's property away from him without giving him a right to be heard.

After quoting Judge Dillon, Mr. Justice Peckham says:

"Many authorities are cited in the note, and indeed the rule commends itself as a rational and a proper one."

Then, going on further, he says:

"As just compensation. which is the full value of the property taken, is to be paid and the amount must be raised by taxation where the land is taken by the Government itself, there is not much ground to fear any abuse of this power. The responsibility of Congress to the people will generally, if not always, result in a most conservative exercise of the right. It is quite a different view of the question which courts will take when this power is delegated to a private corporation. In that case the presumption that the intended use for which the corporation proposes to take the land is public is not so strong as where the Government intends to use the land itself."

Now, I am perfectly confident, Mr. Chairman, that I could multiply authorities from the Supreme Court——

Mr. KEARNS (interposing). May I ask you a question there, Mr. Dent?

Mr. DENT. Certainly, Mr. Kearns.

Mr. KEARNS. Your contention is that the right of the Government to condemn land is founded on a constitutional provision and not upon a declaration of Congress?

Mr. DENT. How is that, Mr. Kearns?

Mr. KEARNS. That any right that the Government has to condemn land is granted by a constitutional provision and not by a declaration of Congress?

Mr. DENT. It arises primarily from the Constitution, but, of course, the specific right in any particular instance would require legislation by Congress to enforce the constitutional right.

Mr. KEARNS. But the declaration of Congress——

Mr. DENT (interposing). The declaration of Congress itself is not binding upon the courts. The question of whether the property is necessary for public use is a judicial and not a legislative question.

Mr. KEARNS. Your position is, then, that if Congress had the right to declare that certain lands were needed for a governmental purpose, and if that would finally settle the question, the owner of that land would not have his day in court.

Mr. DENT. No; my position is just the contrary.

Mr. KEARNS. Then I do not understand your argument.

Mr. DENT. You were not present, Mr. Kearns, when I started my statement.

Mr. WURZBACH. Mr. Dent, I think you misunderstood Mr. Kearns.

Mr. KEARNS. Your claim is that if Congress by passing a law that would declare certain lands necessary for governmental purposes could settle the question, and the courts could not go back of that declaration, then the owner of that land would not have the right to appear in court and defend his title to the land.

Mr. DENT. Yes; I understood you at first.

Mr. KEARNS. That is your position.

Mr. MCKENZIE. If you will permit me, Mr. Kearns, Mr. Dent is attempting at this time to answer the argument made by Mr. Oliver on yesterday.

Mr. KEARNS. I understand that.

Mr. MCKENZIE. And is taking the entirely opposite view of the law as stated by Mr. Oliver.

Mr. KEARNS. I understand that, too.

Mr. DENT. Mr. Kearns, let me state in my own language just what my position is.

Mr. KEARNS. Yes.

Mr. DENT. Or let me put it in this way: Mr. Oliver contends that when Congress by legislative act declares that certain property is necessary for public use, that that is final and conclusive.

Mr. KEARNS. Yes; that is his contention.

Mr. DENT. My contention is that it is not; that the owner of the land still has the right to contest that question in the courts.

Mr. KEARNS. That is what I thought to be your position.

Mr. DENT. Then I misunderstood you.

Mr. MILLER. If I understand you correctly, you contend that condemnation proceedings on behalf of the Government constitute a judicial question.

Mr. DENT. Yes, sir.

Mr. MILLER. That is Mr. Oliver's contention.

Mr. DENT. No; Mr. Oliver's contention is that it is a legislative question and mine is that it is a judicial question.

Mr. MILLER. How would you handle that practically in court? Suppose that Congress should provide for condemnation proceedings and should declare the acquisition of the Warrior steam plant a public use, do you claim that the Alabama Power Co. can come in and contest that on the ground that it is not a public use?

Mr. DENT. Certainly.

Mr. MILLER. And make it a question of fact?

Mr. DENT. Yes; that was done in the Gettysburg case; exactly.

Mr. MILLER. Then if it was a question of fact to be decided by a jury the jury would decide whether it was a public use.

Mr. DENT. No, Mr. Miller, I think it is a question of law.

Mr. MILLER. Have you any case in mind where in a condemnation proceeding on behalf of the Government the question of public necessity is a question of fact?

Mr. DENT. It is a question of law. It is a judicial question. The very case I read, the Gettysburg case, is a case in point. Of course, the law must be based on the facts.

Mr. MILLER. Then do you claim you could go into the question of facts?

Mr. DENT. As to the character of the land and the necessity?

Mr. MILLER. As to the purpose of the land?

Mr. DENT. Certainly; undoubtedly.

Mr. MILLER. Have you any cases to sustain that position?

Mr. DENT. The Gettysburg case. I think if you will read that case——

Mr. MILLER (interposing). I tried to pay very close attention to it, but I could not get that idea from it, Mr. Dent. I never personally have known of a condemnation proceeding on behalf of the Government for any governmental

use, whether for fortifications or what not where the question of governmental use was a judicial question and you could go into that and introduce testimony as to whether or not it was a public use.

Mr. DENT. Why, of course, if land were sought to be condemned for military purposes, for fortifications or for a camp——

Mr. MILLER. Or for a post office or anything else.

Mr. DENT. Or for a post-office building or anything of that kind that is settled on the face of it. You can condemn any land for that purpose; any land would be appropriate and necessary for the purposes of a thing of that kind.

Mr. MILLER. How do you distinguish between different governmental uses? Suppose here is a piece of land we want for a post office and suppose here is a piece of land we want for an electric light plant——

Mr. DENT (interposing). As I said a little while ago, any property may be used for a post-office building or any property might be utilized for fortifications if it was along the coast or in some place where fortification was necessary; but suppose that Congress should order a fortification to be put at a place where nobody would ever contend that a fortification was necessary, do you not think that question would be gone into?

Mr. MILLER. Frankly, not.

Mr. DENT. I do.

Mr. MILLER. And I was much interested in the decision you read from, but I can not get that idea from that decision that you pointed out, Mr. Dent.

Mr. DENT. Well, let us read this again. This is a quotation from Judge Dillon:

"It is stated in the second volume of Judge Dillon's work on municipal corporations that when the legislature has declared the use or purpose to be a public one, its judgment will be respected by the courts unless the use be palpably without reasonable foundation."

It is not clear from this expression that the courts can go into the question; let us, for instance, just to make an absurd illustration, suppose that Congress should declare that Niagara Falls was necessary in order for Mr. Ford to effectuate his Muscle Shoals project and should condemn the American side of Niagara Falls, do you not think the courts could go into that as an absurd proposition?

Mr. MILLER. I think your analogy is an impossible condition, because——

Mr. DENT. Of course, that makes it absurd, but it illustrates the point. At any rate, that authority, in my opinion, is in point, and I do not hesitate to say that if the committee is not satisfied with that, I am sure I can supply them with abundant authorities on the proposition.

Mr. MILLER. If you are through with that decision, will you pass it down to me?

Mr. DENT. Certainly.

Mr. STOLL. Right there, may I ask a question? Mr. Dent, who declares the national policies, the courts or the Congress?

Mr. DENT. Congress.

Mr. STOLL. Well, has not Congress declared the development of nitrates for munitions in time of peace to be a national policy?

Mr. DENT. Yes, sir; I think so, in a way.

Mr. STOLL. And did they not stipulate that it should be at Muscle Shoals?

Mr. DENT. Congress never did; no, sir. Congress never has mentioned Muscle Shoals.

Mr. STOLL. But it was under Executive order of the President, who was given authority to do that.

Mr. DENT. The President located plants there during the war.

Mr. STOLL. Under authority given by the Congress?

Mr. DENT. Yes, sir.

Mr. STOLL. And having declared that a national policy, do you think the courts can say it is not?

Mr. DENT. No, sir; I never have contended that, Mr. Stoll, at all; but in the execution of that policy Congress can not take every piece of property in the land in order to effectuate it. The owner of the property has got a right to go into court and have the court say whether his particular land is necessary in order to carry that policy into effect. That is the distinction I have tried to make.

Mr. WURZBACH. Mr. Dent, I think your position is that when there is a legislative declaration that certain property is taken for public use, that it creates a presumption, and the burden of proof would be upon the contestant to show that it was not.

Mr. DENT. That is it absolutely.

Mr. WURZBACH. It is really a question of the burden of proof.

Mr. DENT. That is exactly what Justice Peckham says in this case.

Mr. KEARNS. Then the question of fact would enter into it?

Mr. DENT. Surely.

Mr. WURZBACH. And it must be shown that it was palpably necessary?

Mr. DENT. Palpably necessary for the governmental policy.

Mr. WURZBACH. And the legislative declaration constitutes a prima facie case?

Mr. DENT. That is it exactly. In other words, the courts will respect the declaration of Congress, but they are not bound by the declaration.

Mr. MCKENZIE. Mr. Dent, may I ask you a question right there?

Mr. DENT. Yes, sir.

Mr. MCKENZIE. I take it you are willing to concede that there is a governmental activity at Muscle Shoals.

Mr. DENT. Yes, sir.

Mr. MCKENZIE. And that it is such an activity that the Government would be warranted in condemning all necessary property at that point or adjacent thereto to carry out this public activity.

Mr. DENT. That is exactly correct.

Mr. MCKENZIE. But your further contention is that the Warrior Plant, being located so far distant from this point, can not be coupled up with the Muscle Shoals plant by any stretch of the imagination as a necessary adjunct to successfully conduct the plant at Muscle Shoals.

Mr. DENT. You have stated my position exactly correct, Mr. McKenzie.

Mr. MCKENZIE. Now, you further contend that even if Congress should pass a law asserting that it is necessary to have the Warrior Plant to successfully carry on the work at Muscle Shoals, that that act could be contested in the courts and tried out as a question of fact of whether or not it was necessary for carrying out the Government's intention?

Mr. DENT. As a question of law, I will put it, based on the facts.

Mr. MCKENZIE. Yes; as I understand, you would go into the courts and you would hear the testimony, and all that sort of thing, and then the court would decide and determine whether or not this act of Congress should be supreme or whether the decision of the court should prevail.

Mr. DENT. Yes, sir.

Mr. FIELDS. Following that question, Mr. Dent, your contention then is that if the Government, when it started nitrate plant No. 2 had attempted to condemn the property of the Alabama Power Co. at Gorgas for its use in the operation of this plant, that they would have had the right to have gone into court and contested the question of the necessity of that land for the operation of this plant.

Mr. DENT. That is right.

Mr. FIELDS. That is your contention.

Mr. DENT. Yes, sir; except I would not say that the Alabama Power Co. would have had the right to go into court because necessarily the Government must be the party plaintiff in the condemnation proceedings, and we would have been the defendant in that proceeding, and we would assert our rights.

Mr. FIELDS. And you would have your right in court.

Mr. DENT. Yes, sir.

Mr. FIELDS. Since they entered into this contract with the Government and the Government spent its money there, what would you say to the question that they waived their rights to be heard in court by letting the Government take possession of it and put its investments on it, thereby recognizing themselves the necessity of this property for the operation of the plant.

Mr. DENT. You have not got the facts straight, Mr. Fields. The Government has never been in possession of the property. We have been in possession of the property all along. We have not waived any rights, because under this contract we have the right to purchase this property from the Government at any time. We expressly reserved our rights in that particular by the contract.

Mr. FIELDS. Then, it is your contention that you reserved your rights?

Mr. DENT. The contract shows that on its face. The contention of some of the members of the committee and others is that that contract is invalid, but conceding the validity of the contract, we have reserved all our rights in the property, and have been in possession of the property all along. The Government could not get possession of that property now. It could not sue in eject-

ment for it because it has no title. The only way the Government would get it would be for Congress to pass a condemnation act, and then for the Government to proceed in the Federal courts to institute condemnation proceedings, and in that case we would assert our rights to the property.

Mr. FIELDS. Granting the validity of the contract, that is your contention; but taking it, on the other hand, and granting for argument's sake that the contract is not valid, then you would admit, I judge, that you did lose your right to be heard by allowing the Government to go ahead and put its money on that land without contesting that right.

Mr. DENT. No, Mr. Fields; but that brings on a discussion of another proposition of law. The law of the place where the land lies is the law that governs this contract, and I have not the slightest doubt in the world, under the law of Alabama, that if this contract is held invalid, then the Government has put property on our land and the property belongs to us, and the Government has lost the money it has put in there. I have not any doubt in the world about that.

Mr. GREENE. Mr. Dent, I suppose the law with respect to the condemnation of private property for Government use is clear enough and has been settled by this time?

Mr. DENT. Yes, sir.

Mr. GREENE. What do you say to the idea that might be involved in this proposition of Mr. Ford's offer, that in order to permit the Government to make a contract with a third party for some uses of his own, the Government had to resort to condemnation proceedings in order to get certain property to turn over to that third person? Is there any doctrine of the courts established about that or settled about that? I am a layman, you know, and am asking for information.

Mr. DENT. Mr. Greene, if I understand you, putting the proposition in concrete form, if Congress should accept Mr. Ford's offer, of course, Congress would have to provide some means and method of taking our property away from us and turning it over to Mr. Ford. I do not know of any way they can do that except by an act of condemnation of that property, declaring that it is necessary for this particular public use, and in that condemnation proceeding we would necessarily be the defendant, and we would assert our rights under this contract, and we would deny that this property was necessary for Mr. Ford's purposes at Muscle Shoals as a public use.

Mr. GREENE. In the last sentence you have brought up exactly the point I wanted to suggest. Is the giving of property to a private individual or corporation for their own employment such a thing as a public use?

Mr. DENT. I do not think so, as an ordinary proposition. Of course, Congress and the legislatures of the States have the right to authorize and have authorized public service and public utility corporations to exercise the right of condemnation.

Mr. GREENE. But they are quasi public corporations.

Mr. DENT. They are quasi public corporations. I do not know of any authority that would authorize a private corporation to condemn land for a man's private use; no; if that is what you are driving at.

Mr. GREENE. That would certainly be an interesting question to be determined in the courts, as to whether the Government in order to complete a contract with a man, the contract running simply to the advantage of the man in his private uses, the Government might have authority to condemn.

Mr. DENT. Yes. And all those questions, of course, we would raise if Congress should undertake to take our property away from us by a condemnation proceeding.

Mr. STOLL. Mr. Dent, did I uderstand you to say in response to Mr. Fields' question that under the law of Alabama where a party gives permissive use of its land for the placing of personal property on it or for the placing of improvements on it, that that party loses its rights and can not recover for the improvements made?

Mr. DENT. No, sir. I did not say that, Mr. Stoll, not where they gave permissive authority to do it. I said if the contract——

Mr. STOLL (interposing). Did not the Alabama Power Co.——

Mr. DENT. Let me answer your question, please. I said that if the contract between the Alabama Power Co. and the Government is declared invalid and void, of no effect whatever, then the Government is in the attitude of having gone involuntarily and without our consent, and put improvements on our land, and, under the laws of Alabama, if I put improvements on your property without any contract with you as the owner you get the benefit of my work and my improvements, and they belong to you.

Mr. STOLL. But this was all put on there before any contract was entered into.

Mr. DENT. Sure it was; most of it was.

Mr. STOLL. It must have been by permissive use. Did the Alabama Power Co. try to enjoin anybody from going on there or to stop them?

Mr. DENT. Not at all, and we are not claiming that.

Mr. STOLL. Then it must have been permissive use.

Mr. DENT. I was simply suggesting what might result if this committee and Congress should hold that this contract was absolutely void and had no force and effect whatever. In my opinion the natural consequence of that would be to give to the Alabama Power Co. all the improvements which the Government has put on that land.

Mr. STOLL. Did not the Alabama Power Co. build those improvements for the Government itself?

Mr. DENT. They did, but they did it under a contract. All the way through the correspondence it is shown, as you will recall, that the Government officials say that this contract will hereafter be put in writing. I am not quoting the exact language, but that is the substance of it. Now, as a lawyer, Mr. Stoll, I am sure you know that where parties engaged for a long period of time in negotiations and pending the negotiations there is an understanding that it is finally to be written into a contract signed by the parties, that the final execution of that contract is the final evidence and memorial of the entire transaction.

Mr. STOLL. My opinion is, Mr. Dent, you will never find any court that will give the Alabama Power Co. that property to the exclusion of the Government. Now, another question——

Mr. DENT (interposing). I do not think so, either, because I think the court is going to hold this contract valid.

Mr. STOLL. I mean even if the contract is held invalid. Now, another question, Mr. Dent, as to condemnation proceedings. The Alabama Power Co. built this transmission line and sold power or agreed to sell power, did they not, to the Government for use at Muscle Shoals in its projects there?

Mr. DENT. Yes, sir; while they were engaged in construction.

Mr. STOLL. By doing that did not the Alabama Power Co. admit that the project at Gorgas was necessary for the carrying on of the project at Muscle Shoals?

Mr. DENT. I think not, and I think that the language of the contract by which the Alabama Power Co. had the right at any time to purchase that property from the Government shows exactly the contrary intent.

Mr. STOLL. Do you think they would have built a transmission line 88 miles to furnish power that the Government did not need?

Mr. DENT. Oh, no; the Government need it, of course.

Mr. STOLL. For what purpose?

Mr. DENT. The Government also needed coal after it got its steam plant there.

Mr. STOLL. But I am speaking of the other situation. What did they need the power for?

Mr. DENT. They needed the power to light the premises and for other purposes. I do not know what all those purposes were.

Mr. STOLL. And for making nitrates, too, did they not?

Mr. DENT. No, sir; not that I know of.

Mr. STOLL. Did they not need the power for that purpose?

Mr. DENT. No; as I understand the nitrates proposition, Mr. Stoll, all the way through, every advocate of whatever process for making nitrogen from the air stated to this committee as long as I was a member of the committee that unless you had cheap water power you could not make nitrates in this country, and the water power was to be used for that purpose.

Mr. STOLL. I understand that, but the water power was not developed, and the fact that the Alabama Power Co. entered into an agreement with the Government to carry this power there showed that it was needed for some purpose by the Government in its development of Muscle Shoals.

Mr. DENT. Oh, yes; that it was needed for some purpose, unquestionably.

Mr. STOLL. Therefore, if it was needed, it would be part of the procedure to condemn it to use it, would it not?

Mr. DENT. There is where you and I widely differ, Mr. Stoll.

Mr. STOLL. Do you not think the Alabama Power Co. is estopped from now coming in and saying it was not part and parcel of it?

Mr. DENT. No, sir; there is nothing in this contract that raises any estoppel, and I challenge anyone to point to any section of the contract that raises any estoppel against the Alabama Power Co.

Mr. GARRETT. Mr. Dent, in the event Mr. Ford's proposition should be accepted and he should organize the company referred to in his proposal and that company should proceed to the construction and erection and completion of a water-power plant to develop power and to sell power to the public, would not that company be impressed with the same quasi-public service of any other public utility company?

Mr. DENT. I think so, Mr. Garrett, in so far as any property is absolutely necessary and essential to carry out the main purpose.

Mr. GARRETT. Then if that company was engaged in that character of public service, the same right of eminent domain that is vested in any other public utility concern would be vested in that company?

Mr. DENT. I think Congress could vest it.

Mr. GARRETT. I mean in the absence of any act of Congress and speaking generally. Railroads get their power of eminent domain, of course, from Congress or from the laws of the States.

Mr. DENT. Let me see if I understand you, Mr. Garrett.

Mr. GARRETT. Here is what I mean: If the company that Mr. Ford organizes operates the power plant for the purpose of selling power to the public as well as consuming it itself, would not that be a quasi-public service corporation?

Mr. DENT. Yes; I think so.

Mr. GARRETT. Then if it is a quasi-public service corporation, and that is what most of them are, Congress could enact a law vesting it with the power of eminent domain just as any other public service corporation.

Mr. DENT. I think the Federal water power act would give such a corporation the right of eminent domain,

Mr. GARRETT. But in the absence of that, inasmuch as this is kind of intertwined with a public interest to start with, and has a sort of governmental charge on it now, would not that be true as to the properties down there? Before asking any further questions, I would like to inquire if Mr. Martin has been dismissed from the stand?

Mr. MCKENZIE. He has not concluded; no, sir.

Mr. GARRETT. Then I will reserve the question I wanted to ask, to ask it of Mr. Martin.

Mr. GREENE. Mr. Dent, may I follow my former questions with this question, to make a distinction between rights which may be vested in a quasi-public corporation and the operations of the Government itself in making a contract with some purpose, would the Government be within its powers to exercise the right of eminent domain for the sake of getting property together, so that it might subsequently turn it over to a private corporation for its own uses.

Mr. DENT. I think, Mr. Greene, that perhaps the Government could exercise the right of eminent domain as to property absolutely necessary and essential in order to carry out this project at Muscle Shoals.

Mr. GREENE. The Government's own project?

Mr. DENT. Yes, sir; or if it sells the project to somebody else, I think it could authorize a public service corporation that was going to build this project and sell power to the public, authorize it to condemn lands absolutely necessary and essential to carry that project into effect.

Mr. GREENE. In other words, as to the property it is to turn over to some private corporation, it might exercise its own right of eminent domain to gather that property together.

Mr. DENT. I rather think it could do that.

Mr. QUIN. Mr. Dent, reverting back to the question of the delegation of authority, the act of July, 1918, gives from the Congress certain powers to the heads of departments, as I understand it.

Mr. DENT. Yes.

Mr. QUIN. Then, the power that was vested in the Congress had to be delegated through that act to some one, and they delegated it to the head of the department and in this instance, the Secretary of War, of course, was intended. What is the difference between that act and a private party giving a power of attorney to some agency or to some party to act for the principal?

Mr. DENT. In legal effect, I do not see any difference.

Mr. QUIN. Do you contend that the party delegated with such power of attorney could transmit that authority for the principal to some other party?

Mr. DENT. Under the terms of this act, Mr. Quin, as I have repeatedly stated to the committee, the act does not say that the contracts must be signed by the heads of the departments, but says that these contracts must be made through the heads of the various departments, and that language was used intentionally, because it would have been absurd; it would have been ridiculous, it would have been a physical impossibility for Congress to have stated that the Secretary of War, and the Secretary of War alone, should sign all the millions of dollars worth of contracts that the War Department made during the war. That would be absurd.

Mr. QUIN. So you do not think that that statute should be construed strictly.

Mr. DENT. I certainly do not. I think it is perfectly manifest that the Congress intended that these contracts should be made in this way, and I will go further and say I do not think Congress would be fair and just to itself if it took advantage of any technicality like that, and I do not believe Congress will do it.

Mr. HILL. On the question of condemnation, Mr. Dent, suppose the Government has in a city a post-office building which it is going to abandon, and it owns a whole block of land with the exception of one corner of the block, which belongs to private individuals. The Government, if it acquired that corner of the block, could sell the whole block for twice as much as it could sell otherwise, would you consider that the Government, having merely in mind the increased price that it would get for its post-office building, could condemn that extra part?

Mr. DENT. No, sir; I would not.

Mr. HILL. That is an illustration I had in mind and I wanted to ask you about it.

Mr. DENT. Yes; and I would like to say that in answering Mr. Greene's question a moment ago I was simply expressing an offhand, first-blush opinion, because I have not investigated that question, and it may be that the authorities would not permit the Government to go out and condemn property to carry a private contract into effect. That is a proposition I have not investigated.

Mr. GREENE. If you will permit me, Mr. Hill, may I ask a question to clarify the situation? What I had in mind was to distinguish the so-called public use for which property might be condemned, and the mere advantage which might arise to the Government from collecting property by condemnation in order to put it to a private use.

Mr. DENT. The illustration that Mr. Hill made points that out very clearly, and I agree with that.

Mr. HILL. It seems to me that is a very simple, every-day illustration, and I think that would apply.

Mr. DENT. Yes; because that is not a public purpose.

Mr. HILL. No; it is not.

Mr. GARRETT. I would like to ask this further question in connection with that matter, Mr. Dent. The question involved here is that the property involved is already charged with a public use, and the contemplation of all the parties is that if the Ford proposition is accepted that the Government is to have maintained for it for 100 years a plant for governmental purposes and for national-defense purposes; and furthermore, just as public-service corporations like mills are established to manufacture food for the people, this plant also is to be charged with the use of making fertilizer for the public; and, furthermore, there is power to be generated there and sold to the public. In other words, in this case there is one distinct governmental use, and that is that this power plant shall be maintained for the purpose of manufacturing nitrate of ammonia and to be kept in condition continually during the life of the contract, ready to be turned over to the Government in any emergency.

Mr. DENT. Yes.

Mr. GARRETT. Do you not think that that would take this case entirely out of the hypothetical case as propounded by the gentleman?

Mr. DENT. I have already stated in answer to a question you propounded to me before, Mr. Garrett, that I think that so far as the property on land immediately adjacent to Muscle Shoals is concerned, the right to construct a dam for the purpose of getting power for making nitrates from the air, the right to construct buildings adjacent to that dam, the right to condemn any land in that neighborhood for the purpose of carrying out this great public use, would carry with it the right of eminent domain.

Mr. GARRETT. That is it exactly.

Mr. DENT. But my contention is that you can not go 88 miles away from there and condemn property belonging to somebody else, which is not absolutely necessary and essential to carry that project into effect. In other words, to illustrate, the Government has a steam plant down there. It built this steam plant in connection with its nitrate plant, I suppose, for the purpose of utilizing it when the water was low and they could not get water power. The Government needs coal for that purpose. It made a contract with the Montevallo Coal Co., way down in Shelby County, south of Birmingham, to furnish coal for it, just like it made a contract with us to furnish power. You would not contend that because coal is necessary to operate that plant the Government could go down in Shelby County and condemn the mines of the Montevallo Coal Co.? Now, that illustrates the proposition, as I understand it.

Mr. GREENE. Will you permit just one more question? In the exercise of its right of eminent domain for the purpose of carrying out its contract would not the Government be confined to those parts of the contract that were manifestly a public use?

Mr. DENT. Exactly.

Mr. GREENE. That is, they could not go outside and condemn other bits of property to turn over to Mr. Ford that related to that part of the plant that he wanted to use for the manufacture of automobile parts?

Mr. DENT. No, sir; not at all.

So much, Mr. Chairman, for that proposition. At any rate, I have given the committee the benefit of my judgment and my opinion on this proposition, and as I have said, if the committee wishes other and additional authorities I am satisfied I can multiply them many times.

Now, Mr. Oliver further contends that the right to sell property acquired during the war under the act of July 9, 1918, does not carry with it the right to postpone the date of the sale, and he refers particularly to that clause of the contract which provides that the Government's right to sell the property to the Alabama Power Co. must not be exercized within the period of three years, and he further contends that the power to sell does not carry with it the power to arbitrate the price.

All I have to say, Mr. Chairman, in reply to that is that whenever any party is given the absolute right to sell property it necessarily carries with it every incidental and implied power that is necessary to effectuate the general purpose of the authority. In other words, the power to sell carries with it the lesser power to make a contract for a sale. It necessarily carries with it the power to fix the terms of the sale. It necessarily carries with it the time when the sale shall take place. All of those things are mere incidents of a general power. That is Hornbook law, Mr. Chairman. I can not understand how any lawyer can contend that the absolute and unequivocal right to sell property does not carry with it the implied and incidental power to do anything that is necessary to carry into effect the contract of sale.

Mr. MCKENZIE. May I ask you a question right there which is not exactly in point, but I would like to know your view if you have not already expressed it? Do you hold that the property placed on the land of the Alabama Power Co., including the transmission line, is in the nature of personal property rather than real property?

Mr. DENT. Mr. McKenzie, my position is this: That if the contract between the Alabama Power Co. and the Government is a valid contract, then that property is in the nature of personal property; but if the contract is declared to be void, then the Government would be in the attitude of having gone upon our land without any authority or without any agreement whatever with us and erected improvements, and those improvements under the law would naturally go with the title and the ownership of the land.

Mr. MCKENZIE. My reason for asking you that question is to ask you another one. It is upon that view that you made the statement that the laws of May and July, 1918, covering the sale of personal property belonging to the Government was applicable to this property.

Mr. DENT. Yes, sir.

Mr. MCKENZIE. And that the law of 1892, I think it was, covering the sale of real estate and the leasing of real estate by the War Department, does not apply to this character of property?

Mr. DENT. I do not know that I have read that law of 1892 very recently.

Mr. MCKENZIE. It was put in at the beginning of the hearings, and provides that the Government or the War Department can only lease for a term of five years.

Mr. DENT. Yes; at any rate, you have my view, whatever it is worth; and Mr. Weathers calls my attention to the fact that the act of July 9 includes real estate as well as personal property. I believe it does say plants.

Mr. MCKENZIE. But under the contract the former statutes, it seems to me, would apply, but that is a matter not to be taken up at this time.

Mr. DENT. Now, the same principle I have just asserted, it seems to me, applies to the right to arbitrate. Wherever parties enter into a contract involving the sale and purchase of property it is common, and it is an ordinary feature of such a contract that if they can not agree upon the terms, that they shall be fixed by arbitration. The law itself favors such contracts. The law favors arbitration as a means of settling differences between parties rather then resorting to the machinery of the courts, and, necessarily, if the price of the property is involved, some method of fixing that price and of ascertaining that price is an incidental power to the right to sell. Therefore, I say the right to fix this price by means of arbitration necessarily follows the absolute power to sell the property.

Mr. MCKENZIE. Your contention is based on the peculiar character of the property in this case, is it not, Mr. Dent? You would not contend that the Government should provide for arbitration to sell a piece of property that was not involved with some one else's property, would you?

Mr. DENT. Oh, no; not at all. I am addressing myself, Mr. McKenzie, of course, to this particular transaction.

Mr. MCKENZIE. Having in mind the situation on the Warrior River.

Mr. DENT. Surely. Let me call attention to that arbitration clause to show how fair it is. Mr. Oliver seems to think it is a horrible proposition that the Alabama Power Co. has the right to name an arbitrator. He seems to take the position that it is a queer provision in the contract that one of the parties to the contract has the right to name his arbitrator. Why, that is done every day in the world in this land. Whenever arbitration contracts are made, this is the form they take and each party names his own arbitrator, and if they can not agree the two select a third. The arbitration provision in this contract goes further and states that if the two arbitrators, selected on the one hand by the power company and on the other by the Government, can not agree upon the third man, then the presiding judge of the Court of Appeals of the Fifth Circuit of the United States shall select the third man. Nothing could be fairer than that in providing the ways and means of fixing the fair price that the Alabama Power Co. should pay the Government for this property.

Mr. GARRETT. The general law of arbitration, in selecting arbitrators, would require that they should be disinterested parties.

Mr. DENT. Yes.

Mr. GARRETT. And not anybody who was interested, either a Government official or a person interested in the Alabama Power Co.

Mr. DENT. They should be disinterested parties, certainly.

Mr. GARRETT. I would like to submit this question in regard to the matter of the contract referred to by Mr. Dent. In the event this contract should fail, what do you say to this proposition, Mr. Dent: Suppose this contract has failed of execution, instead of being executed on the 7th day of November, nearly a year after the operations had begun it, and, as a matter of fact, had never been executed, and that at the signing of the armistice the Government of the United States had owed the Alabama Power Co. $250,000 as a balance due on construction, on its fee for constructing. On what would they recover? What would be the status in that case?

Mr. DENT. They could not recover.

Mr. GARRETT. They would have no claim against the Government?

Mr. DENT. No legal claim.

Mr. GARRETT. Because there was no contract?

Mr. DENT. Because there was no contract; yes.

Mr. GARRETT. Do you not think they would have a right to recover on quantum meruit?

Mr. DENT. Not against the Government. If the contract had been a contract between individuals, they would have, but not against the Government.

Mr. GARRETT. When they went ahead and did this work upon an understanding with the officials of the Government, by letters and telegrams and

memoranda submitted to them, and they did perform it, although no contract was ever executed, would not the Alabama Power Co. have any recourse against the Government, in the event the Government should owe the company a fee?

Mr. DENT. I do not think so, as against the Government itself. That was the opinion of the Comptroller of the Treasury, and the opinion of this committee, and the opinion of Congress which resulted in the passage of the so-called Dent Act. That act was passed for the very purpose of taking care of contracts that had not been executed in accordance with the terms prescribed by the statute.

Mr. GARRETT. Then I understand your position to be that if this contract failed, there is no contractural relationship existing between the Alabama Power Co. and the United States for any purpose?

Mr. DENT. Yes, sir; that is my position.

Mr. GARRETT. And that although the Alabama Power Co., representing the Government, did, as a matter of fact, take Government funds and construct this property upon its real estate, and receive compensation for constructing it upon its real estate, a good fee, and all of the funds necessary for the completion of the work were furnished by the Government, still, that they could be heard to-day that they had not consented to this property being constructed upon their real estate, when they did it with heir own hands?

Mr. DENT. In the first place, Mr. Garrett, the Alabama Power Co. never received any money from the Government. The Government disbursed its own funds on its construction work down there by its own disbursing officer.

Mr. GARRETT. Who did this work?

Mr. DENT. It was done under the supervision of the Alabama Power Co.—that is, the construction—but the disbursements and the payment for it were made through Government officers and by Government officers.

Mr. GARRETT. Did not the Alabama Power Co. have a contract to construct this work?

Mr. DENT. The only one they had was the one of November, 1918.

Mr. GARRETT. As to the actual construction work, did they have the contract, or some other corporation?

Mr. DENT. I believe some of the work was sublet.

Mr. MARTIN. On the minor part, such as grading, some contractors were employed, having teams, merely to do some grading work; but practically all of that was done in the name of the Alabama Power Co.

Mr. GARRETT. Though the Alabama Power Co. was the company that did do the construction?

Mr. MARTIN. Yes, sir.

Mr. GARRETT. The Alabama Power Co. constructed this building upon its property, and for that construction it received a fee, a cost-plus fee. Do I understand you to say that if this contract should fail, although the Alabama Power Co. made a contract with the Government to construct this property upon its real estate, and did, as a matter of fact, construct it and received a good fee for consructing it, it can then be heard to-day that it did not give its consent for this property to be placed upon its real estate?

Mr. DENT. You say if this contract failed, and that the Alabama Power Co. had a contract with the Government. You first state that the contract failed, and then you go on and assume that they had a contract.

Mr. GARRETT. No; I am assuming that they actually performed as though there was a written contract, although the contract may, for some reason, be declared null and void. I am now speaking on that question.

Mr. DENT. Of an implied contract?

Mr. GARRETT. On the question of the Alabama Power Co. having a continuous right to hold this property by virtue of the fact that the Government had put it upon its real estate, under the laws of Alabama.

Mr. DENT. I will repeat what I have repeatedly stated to the committee in answer to your question, because, of course, it is my opinion, which I give for what it is worth, that if this transaction had taken place between private parties or between private corporations that the law would imply a contract, and that there could be a recovery, at least upon quantum meruit, provided no valid written contract was made. But there is a difference when a contract is made with the Government. We went through all of that at the time of the passage of the Dent Act.

Mr. GARRETT. I understand that. You evidently do not catch my point, or I failed to make myself understood. I was rather astounded at your statement that under the law of Alabama, in the event that this contract should fail, that the Alabama Power Co., under the law of Alabama, would have a right to hold all this property as a part of its realty, having been put upon its property in the absence of a written contract.

Now then, would the laws governing property rights in Alabama be different in a case where the Government is involved than one where private individuals or private corporations are involved?

Mr. DENT. The laws of Alabama would not be different on that subject, but the right to contract is different. If you have no contract at all, if the Government is in the attitude of being absolutely without any contract and has gone ahead and erected improvements without the consent or permission of the Alabama Power Co., the general law of the land is that the owner of the lands gets the benefit of the improvements under those circumstances.

Mr. GARRETT. My point is that that would be an impossible condition to arise in this case because the Alabama Power Co. put up these improvements.

Mr. DENT. I think myself it would be an impossible condition to arise, because I think the contract is valid.

Mr. WURZBACH. Would you be willing to make a broad statement that an agent with power to sell could enter into an optional agreement binding upon the principal, without reference to the reasonableness of the terms of the optional agreement?

Mr. DENT. I do not know that I exactly understand that question put in such a general form.

Mr. WURZBACH. In other words, an optional agreement implies, from its very terms, a sale to one person as contradistinguished from a sale to any person willing to pay the price. It limits the possible purchasers by the very terms, does it not?

Mr. DENT. Yes.

Mr. WURZBACH. That is, the usual optional agreement? Do you think that an agent, under a power to sell, would be permitted to make an optional agreement, say, that no sale could be made except to one particular person, say, for a period of six years after the power of sale was granted to the agent?

Mr. DENT. I will answer that in this way, by stating the fact in connection with this contract.

Mr. WURZBACH. That is a hypothetical case?

Mr. DENT. Yes; and it is rather a moot question. But the facts in this case are that under the terms of this contract the Government had the right to demand that the Alabama Power Co. purchase this property, on the one hand, and the Alabama Power Co. had the right to demand of the Government that it sell the property. I do not see any reason why an agent, having authority to sell, can not go ahead and select the party to purchase the property, including that party in the agreement, at a certain specified time and stating that that party shall buy the property. I do not think the time limit has any effect upon the authority of the agent.

Mr. WURZBACH. I asked the question having in mind the acts of May and of July, 1918. I think you admit that is the only authority for the execution of this contract?

Mr. DENT. Yes, sir; that is true.

Mr. WURZBACH. You claim that that act gives authority to certain agents of the Government to sell Government property?

Mr. DENT. Yes, sir.

Mr. WURZBACH. There was no sale of the property made in this contract, but it is at most an option conferred upon the Alabama Power Co. to buy at a future date?

Mr. DENT. I do not agree with you that it is at most only an option. It is an absolute right on the part of the Government to demand that the Alabama Power Co. purchase this property; on the other hand, the Alabama Power Co., as the other contractor, has the absolute right to demand of the Government that it sell. There is no option in that.

Mr. WURZBACH. But the price was not agreed upon at that time.

Mr. DENT. No; the price was not agreed upon at that time, but the method was provided in the contract by which a price could be ascertained.

Mr. WURZBACH. According to the terms of the contract, if it is a legal contract, no one else could bid for the property except the Alabama Power Co.?

Mr. DENT. No, sir.

Mr. WURZBACH. Do you think the agents of the Government had the power under the authority of the acts of Congress of 1918 to make that kind of a contract?

Mr. DENT. I certainly do. I think it is necessarily implied within the terms of the absolute power of sale. It was a contract; it was an absolute contract to sell this property at a fixed period of time. I do not see any legal objection to that. There is no option in it that I can see.

Mr. WURZBACH. In any kind of an optional agreement, a usual optional agreement, it means, in effect, that no one else can buy except the person with whom the agreement is made?

Mr. DENT. That is true.

Mr. WURZBACH. And it is inconsistent with an open sale, is it not?

Mr. DENT. It is not a sale at that particular time; it is a sale at a future date, so far as this contract is concerned. I repeat that this contract is not, strictly speaking, an option contract.

Mr. WURZBACH. Except as to the price that is to be paid?

Mr. DENT. Except as to the price that is to be paid, but the sale——

Mr. WURZBACH. You think it is a binding agreement?

Mr. DENT. A binding agreement to sell at the time it was made, and the terms of sale, and the date of the sale were agreed upon, and the price of the property was to be fixed at a later time.

Mr. GARRETT. Under the law, Mr. Dent, has the Government the right as yet to demand the purchase of this property by the Alabama Power Co.?

Mr. DENT. Yes, sir.

Mr. GARRETT. What did the contract provide about three years subsequent?

Mr. DENT. The Government, as I recall the terms of the contract, could not make a demand until the expiration of three years after the war. Anybody who studies the matter can understand why that provision was put in the contract. At that time neither the Alabama Power Co. nor any other corporation could borrow any large sums of money, during the war, and nobody knew how long that financial condition was going to last after the war; and it was put in there so that the Alabama Power Co. would not be caught in such a condition when the company was in such a financial plight after the war so that it could not obtain money to carry out a contract; and that is a very fair and reasonable provision in the contract.

Mr. GARRETT. You mean that the Government could not demand that the Alabama Power Co. buy this property before three years subsequent to the conclusion of peace?

Mr. DENT. I think that is the term.

Mr. GARRETT. According to the proclamation of the President. So there is yet to run about two years, during which the Government can not get it, although the war has actually been over about six months.

Mr. DENT. That is the fault of Congress and the President that peace was not declared any earlier. It is not our fault.

Mr. GARRETT. But it is provided in the contract, on the other hand, that the company may demand that the Government sell it at any time?

Mr. DENT. Yes.

Mr. GARRETT. That the Government sell to you?

Mr. DENT. Yes.

Mr. GARRETT. But that the Government has to wait for a fixed period of years before it can demand the purchase?

Mr. DENT. Yes, sir.

Mr. GARRETT. Do you think that is sauce for the goose as well as sauce for the gander?

Mr. DENT. I think that is a fair proposition, and the reason was that if the Alabama Power Co. found itself in such a financial condition at any time that it could pay the Government for the property, the sooner it bought it the better off both the Government and the Alabama Power Co. would be, and the three-year clause was put in there because of the financial condition that necessarily follows every war.

Mr. GARRETT. Do you not think the three-year clause was put in there because the Alabama Power Co. expected to pay for the plant in three years out of its sinking fund which the Government was to pay for the power?

Mr. DENT. Of course, if the contract had run on and the Government had paid for the power, it would have come out of the sinking fund. But it was our property.

Mr. GARRETT. It was your property, created by the Government. You have a situation of the Government building your plant out of its own money, and then you fix it so the Government can not demand that you sell it, and then you create a sinking fund under which the Government could pay to you the

cost of the plant at the end of three years, which you expected it would do, and it would have done, if the plant had been operated to its full capacity. I do not see where the Alabama Power Co. is incurring any liability. In other words, here is a case where the Government built a plant and paid for it out of its own funds, and gave your company a commission for building it, and then you tie up the Government so you can demand that you may buy it in such a length of time so that you would have been able to pay for the cost of the plant out of the sinking fund created by the amount the Government paid for the power.

Mr. DENT. If you had been the Government officer, you would not have written the contract in that way?

Mr. GARRETT. No, I would not.

Mr. DENT. But the contract is written that way, and the question is whether you are going to carry out its obligations.

Mr. WURZBACH. Coming back along the same line of questions I propounded to you awhile ago, section 5 of article 22 of the contract has this provision:

"In the event that the contractor shall on demand of the United States fail or refuse to purchase the Warrior extension and Warrior substation under any of the foregoing subdivisions of this article, the United States may sell the same to another, subject to the conditions that said properties shall not be operated and that they shall be removed within six months after the sale has been consummated."

So, as a matter of fact, the agreement that was entered into, which we first called an optional agreement but which you stated was really not an option but a firm and binding agreement, on the face of the contract it is still optional with the company, and they do not have to buy this property at the terms provided in the agreement.

Mr. DENT. I think they do, Mr. Wurzbach. I think that clause you have just read was put in there to protect the Government in the event the Alabama Power Co. could not carry out its contract.

Mr. WURZBACH. Could not or would not?

Mr. DENT. Could not or would not carry out this contract, and that the Government would have the alternative right to sell this property rather than suing the Alabama Power Co. for a breach of the contract.

Mr. WURZBACH. Of selling it to some one else?

Mr. DENT. Yes.

Mr. GARRETT. Selling it to some one who would operate it?

Mr. WURZBACH. And removing the property. Do you not think that is such a penalty to be attached against the Government if, as a matter of fact, it was entirely optional with the Alabama Power Co. whether or not they would buy that property?

Mr. DENT. I do not. I think if the Government demands under that contract within the time limit that the Alabama Power Co. purchase the property, and the Alabama Power Co. refuses to do it, the Alabama Power Co. has broken the contract and would be liable for a breach of contract; and that the other remedy was an alternative remedy in case the Alabama Power Co. should become insolvent, for instance, before the expiration of that period.

Mr. WURZBACH. Even if they were financially able to buy, you do not contend that in the face of section 5 they would be under any obligation to buy this property?

Mr. DENT. Yes; I do. That is a privilege on the part of the Government.

Mr. WURZBACH. I can not agree with you on that.

Mr. DENT. You will have to construe the whole section together.

Now, Mr. Chairman, I will pass on as rapidly as I can. I believe that includes practically every proposition that my friend, Mr. Oliver, asserted before the committee yesterday, except a statement that this Muscle Shoals property was not property that was acquired for the emergency, but it was property that was acquired for permanent use. I just want simply to state that it occurs to me that the facts will not bear out my friend, Mr. Oliver's, contention in that respect, because the President located this plant there as a war-time measure, and it was located there during the war as a war measure. As a matter of fact, we will all recall that in the last Congress, in the closing days of the last Congress, those of us who were in favor of the continued development of Muscle Shoals undertook to get Congress to authorize the Government to go on with it as a permanent institution, and Congress turned us down, and the War Department closed shop completely. Now, what you are considering is whether or not it would be the intention to make that a permanent establish-

ment. As to what has been done down there, it was, strictly speaking, no more or no less than a war measure, which the President by his order made in order that we might be protected in the event that we could not get nitrates from Chile.

The last proposition is this: Mr. Oliver calls attention to a proviso in the act of July 9, 1918, and contends that that proviso shows that the act had its limitations, and that by reason of the fact that the Secretary of War should make a detailed report to Congress of the sales of war materials, lands, factories, or buildings and equipment sold under authority contained in this act. Now, Mr. Oliver states in his argument, after quoting that proviso in the language in which it is written in the law, that they had to report to Congress the terms of the sale, the price received, and so on, at the next regular session of Congress, which occurred within eight or nine months after the act was passed. I am sure my good friend and former colleague from Alabama did not intend to mislead the committee. I know he would not do anything of that kind; but he overlooked the fact that the language of that proviso reads this way, that a detailed report shall be made to Congress on the first day of each regular session of the sales of such war supplies. It was not limited, Mr. Oliver, to the next regular session; it provides expressly that a report must be made on the first day of each regular session following the sale under this authority. That is the language of the act itself, so the proviso can not be construed as my friend has contended. He evidently overlooked the word "each" in that proviso.

I believe that covers practically everything except one little paragraph that I want to call attention to, the closing paragraph in Mr. Oliver's remarks, the very last sentence, where he says by way of peroration, "Is there any man who ever studied law for a day that would for a moment contend that, where you confer authority to sell large and valuable property upon an agent and confer it upon him and him alone, the agent has the right in the exercise of that authority to sell to delegate to the party who is to buy the right to appoint some one to fix the price?"

You would conclude from reading that statement—that is, anybody who was not familiar with the terms of the contract—that Mr. Oliver intended to convey the idea that this contract gave to the Alabama Power Co. the right to fix the price of this property. I am sure Mr. Oliver did not intend that. But yet that is the way his language reads. I am sure when my good friend comes to revise his remarks he will change that somewhat, because there is absolutely nothing in the contract which authorizes the Alabama Power Co. to fix the price of that property. We have already shown you that.

In conclusion—and I am sorry I have taken up so much of the time of the committee—we contend that this property is not necessary for the public use at Muscle Shoals, and that we have a legal right which we can assert in the courts. We contend that the right to make an absolute sale carries with it the right to fix the time, the terms, and conditions of sale, all the details necessary. Those are the two main propositions asserted by my friend here.

We contend that under this contract we have the right, the absolute right, to purchase this property at a fair value to be fixed, if it can not be agreed upon, by arbitration; and we furthermore contend that under the law of Alabama, if the contract between the Government and the Alabama Power Co. is held to be absolutely void, and that there is no contract whatever between the parties, then under the law the property which the Government has placed upon our land belongs to us.

Mr. GARRETT. On the question of sale, under the contract that provides for sale but does not fix the terms. Does not the law in the respective States and does not the law in Alabama provide that where you have a contract for sale, but the terms and conditions of the sale are not fixed in the contract, there is a statute which provides that it shall be sold as under execution? Usually the States have such a statute, that where you have a contract providing for the disposition of property, as in this contract, but it does not fix the time or the terms, is there not generally a statute that provides that where there is no time fixed or no terms fixed in the contract that it shall be sold as under execution?

Mr. DENT. There is no such statute in Alabama.

Mr. Chairman, let me call your attention to a daily news letter issued by the War Department on Tuesday, August 18, 1918. I just want to have this go in the record, showing that the action of the Government in furnishing money to increase manufacturing facilities during the war was not limited to the Alabama Power Co. That was an ordinary form of contract that the Government

entered into with various manufacturing industries during the war. This circular issued by Gen. Goethals contains this language:

"The increased manufacturing facilities that have been created by the War Department, exclusive of the new industries serving the Navy and the Emergency Fleet Corporation, from April 7, 1917, to July, 1918, cost approximately $400,000,000. So ours is not a peculiar contract; that was the ordinary form of contract in this case."

Now, Mr. Chairman, I am advised that Maj. Booten, of the Ordnance Department, who has the records of the department in reference to this contract, is here and prepared to give the testimony which I stated we could establish to show that the Secretary of War himself did authorize the making of this contract. Are you ready to hear him now?

Mr. OLIVER. I wonder if the committee would give me a few moments?

Mr. GREENE (acting chairman). What is the committee's pleasure? Without objection, Mr. Oliver may proceed.

ADDITIONAL STATEMENT OF HON. WILLIAM B. OLIVER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA.

Mr. OLIVER. Mr. Chairman, I appreciate the indulgence of the committee, and will endeavor not to impose long on your valuable time.

Mr. Dent and I are not exceptions to the ordinary lawyers who drift into the habit of confidently asserting the correctness of our respective positions. In this case, fortunately for me, I think Mr. Dent has referred the committee to a decision which, if you will carefully read, fully answers the position he now takes, and is an unquestioned authority in support of the position taken by me on yesterday. It is not unusual for two lawyers to think that one and the same decision constitutes an authority for the positions taken by each of them.

Mr. DENT. Or to think they have.

Mr. OLIVER. As to my remarks on yesterday, I had no opportunity to prepare a brief, and my statement was made in an impromptu way, but the questions of law involved were simple and well and thoroughly settled, and I can but feel that the committee will agree as to the correctness of my position.

I stated that since the Government had a national project at Muscle Shoals devoted, and to continue to be devoted, to a public use, that Congress had the unquestioned right to determine what property was necessary to be taken by condemnation for the enjoyment or furtherance of such national project, and that when Congress directed what property was necessary and should be acquired by condemnation, that the necessity for the taking of such property was a matter of legislative decision and not open to the courts for review. I still insist that this is the law, and the case cited by Mr. Dent is the highest authority for the correctness of my position.

In the case he refers to, two questions were raised: First, whether a battle ground could be acquired and set apart for public use, and second, whether Congress had the right to determine what property should be taken in connection therewith for such public use and enjoyment. In that case a railroad company contested the right of the Government, through Congress, to first declare that the battle ground could be maintained and set apart for public use, and second, even though the court should hold that such was a proper public use that the righth of way of the railroad company, which Congress had directed should be condemned, was in no way necessary to the use and enjoyment of the battle ground. The court held that Congress had properly declared a public use by seeking to preserve the battle ground at Gettysburg, and that since it had declared a public use at such place, the question as to what property should be taken for that public use was altogether a legislative question, and the necessity for the taking of such property as Congress might determine should be taken could not be inquired into by any court. The court simply held that courts could inquire into the public use sought to be declared by Congress, but when a proper public use was found that then the action of Congress in declaring what property should be taken for the enjoyment of that public use was a legislative and not a judicial question.

I read in support of my decision this excerpt from the decision cited by Mr. Dent:

"It is also objected that the exception below is valid, wherein it is stated that all of the land of the railroad company ought to be taken, if any were to be taken. The use for which the land is to be taken having been determined to be a public use, the quantity which should be taken is a legislative and not a judicial question," citing the case of Shoemaker *v.* The U. S., 147 U. S. Reports.

These are the decisions that Mr. Miller, a member of the committee, had in mind when he asked Mr. Dent, "Have you any authority holding that where a public use has been properly fixed and declared, that it is then a matter of judicial determination as to the necessity for taking property to carry out such public use, where Congress had declared the taking of such property a necessity?"

Mr. Dent had no authority which he could cite Mr. Miller to, and I submit he can find none. The very authority he reads to the committee denies the position he asserts.

On yesterday the committee will recall that I stated that since the Government owned a nitrate plant at Muscle Shoals, which was to serve the Government in war and in peace for a public use, and since the question now before the committee was whether the power plant at Gorgas and the transmission line leading therefrom, constructed with Government money, on land of the Alabama Power Co., and which supplied electric energy and power to the nitrate plant at Muscle Shoals, was necessary for the use and enjoyment of such nitrate plant, if Congress decided that it was, and ordered the acquirement of the land on which the Government property was situated, by condemnation, that the action of Congress would be conclusive on the question of necessity, and could not be inquired into by any court. The rereading of my remarks on yesterday will show to the committee that that was the position I took.

Mr. FIELDS. You meant the power plant at Gorgas?

Mr. OLIVER. Yes. In conclusion, I do not think my distinguished friend and former colleague, Mr. Dent, will be able to supply the committee with any authority to sustain the position he announces as to the law of agency. I have read the law of agency to no effect, if Mr. Dent's remarkable declaration of what a simple power to sell, with the qualifying proviso, which I called attention to on yesterday, can be construed into an authority for the agent to postpone the right of the principal to sell his property for six years, and further authorize an option on the property, delivering possession to the optionee with the right to use the property, during such term of six years, when the right of the principal has been postponed to sell, the optionee, however, having the right to purchase during such time if he so elects, and should he elect at the expiration of said six years to purchase and the price and value of the property at that time could not be agreed on, that then the optionee should have the right to appoint an arbitrator and the Government an arbitrator, and these two the right to select a third to ascertain and fix the value of the property at such postponed time. Surely my friend will not insist that the President or head of an executive department, authorized by the July 9 act to sell war emergency property, requiring that where a sale was made that a report should be submitted to the next ensuing regular session of Congress, showing the property sold, to whom sold, for what purpose sold, and the price received, would authorize the President or head of an executive department, one or both, to enter into a contract which, according to its terms, would postpone the right of the Government to sell the property to anyone for six years, giving to the Alabama Power Co. during this time the use of the property and the right to purchase if they so elected, and if the price, when its election to purchase was so exercised, if ever, could not be agreed on, that then the power company might appoint one arbitrator, the Government one, and these two a third, could by any stretch of the imagination be construed as a proper exercise of authority by the President or the head of an executive department under the said act. If he can find any authority to sustain him in that contention, I am sure the lawyers on the committee will be glad to read it. Mr. Wurzbach properly called attention to the absurdity of such an insistence.

There is no law so well understood as that the agent must get his authority absolutely from the principal, and all reasonable intendments against the improper exercise of it are indulged in favor of the principal, and the party dealing with an agent must himself consult the authority under which the agent seeks to act, and is chargeable with notice of every limitation placed on the agent. Surely, in the power given by Congress to the President or to the head of an executive department to sell property, no authority was given to anyone, whether President or head of an executive department, much less to a subordinate, to postpone the right of the Government to dispose of that property for three or six years and to grant to a prospective purchaser an option on and the free use of it during such postponed period, or to exercise a right which he might or might not claim, to call for an earlier sale.

I am astounded that the gentleman could read into any law of agency so broad an interpretation as that.

Now, in reference to his criticism of my statement of the proviso in the act of July, if he had read just a little further on in the speech, he would have found that it was subject to this limitation, that the agent must report sales made prior to the next session of Congress. Of course, that is what I meant. In other words, if the President, or head of an executive department, undertook, in the exercise of the authority to sell, granted by the act of July, to sell before the next regular session of Congress, then as to the sales he undertook to make, he was to report the purchaser, the purpose of the sale, and the price received. In this case it so happened that the power company claimed that there was a sale to it before the December session of 1918. Then, under the provisions of the act of July 9, the agent had to report that sale to the December, 1918, session of Congress. And in doing so he had to report the name of the purchaser, the purpose for which he bought it, and the price received. Pray tell me how the agent in this case, granting that he had authority to sell, could have reported those facts, since, lo and behold, we find no price is fixed, or even is to be considered, until after three years from the date when the proclamation of peace is issued by the President. That proviso of itself served notice on all prospective purchasers that if you undertake to buy property from the Government under act of July, 1918, you must, before the next session of Congress, in so far as to that which you now seek to buy, agree definitely on the terms of the sale, because the agent of the Government is only authorized to sell when he can report that fact back to Congress.

How could this requirement of Congress, as set out in the proviso of the July 9 act, have been complied with?

I thank you, Mr. Chairman and gentlemen.

Mr. HULL. I would like to ask you one question. Probably I do not understand the matter. I understand from your argument that you claim that decision gives Congress the right to take this property away from the Alabama Power Co. and at the same time, practically, to make a contract with Henry Ford for its purchase. In other words, I have not any doubt that we have the right to take it for our own use, but there is a question in my mind as to whether we have the right to take this property from the Alabama Power Co. and transfer it to Henry Ford.

Mr. OLIVER. That question was asked on yesterday in your absence.

Mr. HULL. Do you claim that the decision you quoted gives us that right? It is not clear in my mind that it does.

Mr. OLIVER. I stated on yesterday in reply to a similar question that this property, as I understood, if you should order it taken by the Government, is to be used in connection with a governmental purpose which you in the 1916 act had declared to be a national project, to wit, the maintenance of the nitrate units at Muscle Shoals, and they were to be kept by the party to whom you might sell or lease, if the proposition now before you is accepted, for 100 years in a stand-by ready condition, and I thought that if the Gorgas Power Plant was taken to supply electric current to Nitrate Plant No. 2, that would be in connection with the use and permanent operation of a national project, and on that hypothesis unquestionably had the right to acquire and condemn the Gorgas plant.

Mr. HULL. I agree with you as to plant No. 2, and that, fundamentally, is what we are after, the preservation of plant No. 2. But if we do it under that power, then we have got to establish in a court that this plant at Gorgas, 88 miles away, was essential to plant No. 2.

Mr. OLIVER. No.

Mr. HULL. I think you would.

Mr. OLIVER. This decision holds, Mr. Hull, I think you will find if you read it carefully, that since you have declared a public use which is recognized as a public use, at Muscle Shoals, for a national project, then you have the right to condemn property to be used in connection therewith, and Congress determine the necessity of what property is necessary for the operation of that plant at Muscle Shoals. That is a legislative question and not a judicial one.

Mr. HULL. But there is nothing in the Ford contract as to the preservation of this transmission line to the Gorgas plant for the use of the Government in the future, is there?

Mr. OLIVER. That is the way I read it, Mr. Hull; that is my understanding of it.

Mr. GREENE. We are very much obliged to you, Mr. Oliver.

Mr. OLIVER. I appreciate the courtesy of the committee very much.

(Thereupon, the committee adjourned to meet to-morrow, Thursday, March 2, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Thursday, March 2, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. I have before me two letters asking that certain statements be put in the record so as to correct other statements that have been made here. One is from Mr. Waldo, calling attention to a telegram from Mr. Swann, and the other letter is from Mr. Bower, and, if there is no objection, the letters will be put in the record.

(The letters referred to follow:)

WASHINGTON, D. C., *February 27, 1922.*

Hon. JULIUS KAHN,
Chairman Committee on Military Affairs,
House of Representatives, Washington, D. C.

DEAR Mr. KAHN: In order to meet the representations made by Mr. Hammitt regarding the limitations of the Swann process for the manufacture of phosphoric acid, I wired Mr. Swann advising him of their statement regarding his process and have received the attached reply.

Will you kindly read this into the record and very much oblige,

Respectfully,

W. G. WALDO.

[Telegram.]

BIRMINGHAM, ALA., *February 20, 1922.*

W. G. WALDO,
No. 205 Third Street, SE., Washington, D. C.:

American Cyanamid Co. representatives have no definite knowledge of our operations. Their statements are incorrect. Phosphoric acid can be made in large quantity by our process without producing tonnage of ferrophosphorus in excess of market requirements. We have made every effort to produce largest tonnage possible of ferrophosphorus because price was higher per unit of phosphoric acid than in fertilizer.

THEODORE SWANN.

FARM BUREAU, AMERICAN FEDERATION,
Washington, D. C., March 1, 1922.

Hon. JULIUS KAHN,
Chairman Committee on Military Affairs,
House of Representatives, Washington, D. C.

DEAR Mr. KAHN: In the hearings of yesterday, February 28, Mr. Martin, president of the Alabama Power Co., called the attention of the committee to a seeming contradiction between testimony I gave before the subcommittee of the Appropriations Committee of the House, February 15, 1921, and the testimony I presented to your committee February 23, 1922. This seeming contradiction being that before the Appropriations Committee I stated that his nitrate plant could operate on secondary power and before your committee that it could not.

I desire to call to your attention the fact that in 1921 it was a Government corporation not operating for profit which, in addition to operating the nitrate plant, had the control of and could sell all the power generated by the Wilson Dam, by the steam plant in connection with No. 2 nitrate plant, and also the power from the Gorgas River plant. A single corporation operating both the nitrate plant and all this power, I submit, might, in order to sell a complete

block of 100,000 primary horsepower, operate the nitrate plant on secondary horsepower by at least two methods.

First. As suggested to the Appropriations Committee, during periods of low water the carbide furnaces might be temporarily closed but the balance of the plant kept in operation. This could only be done by the utilization of the additional secondary horsepower—over and above the secondary horsepower required for the operation of the nitrate plant—which is available from the flow of the river during the periods of high water for the operation of stand-by carbide furnaces—2 of the 12 are so designated—to accommodate sufficient carbide to continue the operation of the balance of the plant during the time it was shut down. This is based on having sufficient primary power to operate continuously all of the nitrate plant except the carbide furnaces. These furnaces use approximately 90 per cent of the power consumed in operating No. 2 plant. Of course, this would entail considerable expense which such a corporation, however, might well charge against the cost of selling the block of 100,000 primary horsepower at commercial prices.

Second. It might operate the nitrate plant on secondary power, and in periods of low later utilize the steam power plant at nitrate plant No. 2 for the operation of this plant during low-water periods. Again, in this case the extra cost entailed in the using of the steam power during the low-water period could properly be charged as cost against the sale of this 100,000 primary horsepower.

I wish to submit, however, that under the present situation a company leasing nitrate plant No. 2 under the terms of the Alabama Power Co.'s lease could not avail themselves of either of these two methods, and consequently my belief is that it could not bear the expense of closing down the plant during low-water periods.

Testimony of Mr. Swan, as you will remember, dealt with the production of phosphoric acid in electric furnaces. This does not necessitate the expensive air liquefication of a nitrate fixation plant and is simply an electric furnace operation in which the phosphate rock is treated directly in the furnace phosphoric acid obtained and utilized in treating more phosphate rock in the production of double superphosphates. I do not desire to differ with Mr. Swan that such operation as this might be operated on secondary power and close down during low-water periods, but this is not analogous to the operation of the nitrate plant No. 2 with the large investment in machinery required for the air-fixation feature of it, which is the question when you consider operating nitrate plant No. 2 with such secondary horsepower as would be provided by the Alabama Power Co.

I would greatly appreciate it if you would bring this statement to the attention of the committee and allow it to be printed in the hearing directly following the testimony of the Alabama Power Co., and I wish to say in fairness to Mr. Martin, that had he analyzed the situation as above set out I do not believe he would have called the attention of the committee to the so-called contradiction.

Very truly, yours,

AMERICAN FARM BUREAU FEDERATION.
R. F. BOWER, *Special Assistant.*

STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO.—Resumed.

The CHAIRMAN. Mr. Martin, we will now proceed from where we left off. Mr. Miller was asking you some questions, but he tells me he has concluded, and Mr. Hill would like to question you.

Mr. HILL. Mr. Martin, thanks very largely to some of the senior members of this committee, the United States has a definite national-defense policy at this time. The Fourth Army Corps Area takes in North Carolina, South Carolina, Tennessee, Mississippi, Florida, Georgia, and Alabama. It has been recommended by this committee that Camp McClellan, which is near Anniston, be retained as the headquarters training area for that corps. I have before me here the map of the Alabama Power Co.'s distributing system, which you furnished the committee, and I want to ask you if I am correct in these estimates of mileages which I have made, using the scale that you have on this map. As I see it from this map, nitrate plant No. 2 is 120 miles from Anniston on a straight line.

Mr. MARTIN. That is approximately correct.

Mr. HILL. The Warrior reserve steam plant I figure to be 70 miles from Anniston, roughly speaking.

Mr. MARTIN. That is about right, Mr. Hill.

Mr. HILL. And nitrate plant No. 2 is, roughly, 75 miles from the Warrior reserve steam plant?

Mr. MARTIN. As the transmission line is constructed, which I think is really the nearest route, it is nearer 90 miles.

Mr. STOLL. Eighty-eight miles.

Mr. HILL. The transmission line, I understand, is 88 miles. I was simply figuring this on air-line distances for purposes of comparison.

Mr. MARTIN. You understand that in building a transmission line you have got to build it with reference to contours, railroads, supplies, and in some instances they can not be directly on an air line because mountains or valleys or marsh conditions may slightly change the direction.

Mr. HILL. That is a very hilly country through there and some parts of it are mountainous.

Mr. MARTIN. We have to select the route to some extent with reference to the contour of the land.

Mr. HILL. Camp McClellan is situated, roughly, in approximately the center of this Fourth Army Corps Area. Your Gadsden reserve plant is very close to Anniston, is it not?

Mr. MARTIN. Yes, sir; about 30 miles from Anniston.

Mr. HILL. During the war your company furnished the American Government light and power for the Camp McClellan situation, did it not?

Mr. MARTIN. Yes, sir; we furnished the light and power at Camp McClellan, and we are still supplying, of course, the light and power that is used at Camp McClellan.

Mr. HILL. In other words, your company during the war supplied what power and light was needed at Camp McClellan and is still doing so for Government purposes?

Mr. MARTIN. That is correct, Mr. Hill.

Mr. HILL. And your company's network of plants and lines runs all through that country, Gadsden, Camp McClellan, Talladega, and all that region down through there?

Mr. MARTIN. That is correct, Mr. Hill.

Mr. HILL. That is a very rough, mountainous country through there?

Mr. MARTIN. Some parts of it are quite mountainous.

Mr. HILL. And especially near Camp McClellan.

Mr. MARTIN. Yes

Mr. HILL. But it was considered by the War Department one of their very best southern training camps?

Mr. MARTIN. Undoubtedly it is, Mr. Hill, because the country is very healthy and there are many advantages, of course, which you understand, because I understand you were there for a while.

Mr. HILL. Yes; I was there for nearly a year, and I know that general country. We maneuvered all around that Gadsden country and Talladega country with the division.

Mr. MARTIN. Yes.

Mr. HILL. Were you here during most of these hearings, Mr. Martin?

Mr. MARTIN. I was not in the room. I was in Washington during all of these hearings; yes.

Mr. HILL. I want to call your attention to page 374 of the hearings. Have you that volume before you? It is part 7.

Mr. MARTIN. Mr. J. W. Worthington's statement.

Mr. HILL. Yes; this is Mr. J. W. Worthington's statement given on Thursday, February 16. Mr. Worthington appeared as chairman of the executive committee of the Tennessee River Improvement Association. I asked him certain questions and a would like to read a portion of that page in order to bring the matter up again. We were discussing the guaranties offered by the Ford proposition for the production of fertilizer, and I suggested a different method of measuring the guaranteed power that was to be put in fertilizer. There had been some question about how much finished fertilizer would be the equivalent of 110,000 tons a year of nitrate, and there was some uncertainty about it. I said this:

"Mr. HILL. In connection with your expression in reference to the allotment, whether there would be any allotment of a definite amount of horsepower for the use of the fertilizer plant and the nitrate plant, what would that be in value?

"Mr. WORTHINGTON. In that particular case, measuring the production of nitrate plant No. 2 in ammonium nitrate, it would be about 110,000 horsepower.

"Mr. HILL. You spoke of its being from 100,000 to 110,000 horsepower.

"Mr. WORTHINGTON. Stating the production in terms of ammonium nitrate.

"Mr. HILL. Would it be a thing for us to consider here in connection with section 14, concerning which there has been a good many questions—you probably recollect that the Secretary of War testified that he was not clear as to the guaranty for the production of fertilizer, so we have been particularly interested in section 14. Suppose we added to section 14, in the third line, after the words 'ammonium nitrate per annum' something to this effect: 'And that the company would promise to devote to the said production 100,000 of primary horsepower from dams Nos. 2 and 3, or from the steam plant at Gorgas, or the steam plant at nitrate plant No. 2 throughout the lease period.' That is providing that there would be a devotion of a certain amount of horsepower to that production of fertilizer.

"Mr. WORTHINGTON. That section absolutely carries that amount of power that Nitrate Plant No. 2 is operated to the capacity production of 110,000 tons of ammonium nitrate or its equivalent.

"Mr. HILL. I so understood from you. Would there be any objection to putting that in as an amendment to the provisions of the section—that they devote a minimum of 100,000 horsepower to the production of fertilizer?

"Mr. WORTHINGTON. You will, I am sure, appreciate how one in my position is situated right now; that I could not answer whether Mr. Ford would agree to that.

"Mr. HILL. Would you mind talking that over with Mr. Ford?

"Mr. WORTHINGTON. I will discuss it with Mr. Mayo, and we will see what can be done."

Now, I am much interested to see that in your offer you have measured your annual rental, as you might say, or your annual return to the Government, in power on that horsepower basis. Now I hold in my hand the printed copy of your offer furnished by the Secretary of War. You offer, in the first place, to take out a license under which you will complete the dam, locks, and power house at Dam No. 2, which is the Wilson Dam. Second, you offer to furnish free to the Government, or anyone it may designate, from the hydro-power plant 100,000 horsepower as required for the production of fertilizer and the munitions of war and for research in connection therewith, and if, due to changes in the art, its use of as much as 100,000 horsepower is discontinued by the Government, the Alabama Power Co. is to purchase and pay for the same in accordance with the schedule set forth in the license. This power to be the second 100,000 horsepower at any time available from the normal flow of the river. Then you speak of purchasing the Government's interest in the Warrior extension.

Now, as a member of this committee, I am looking at this proposition from the point of view primarily of national defense.

Mr. MARTIN. Yes.

Mr. HILL. But also having in mind the great demand on the part of the public for cheaper fertilizer; but to me this is primarily a national-defense proposition. This corps area here—the Fourth Corps Area—has always been a mobilization-camp section in every war we have had.

Mr. MARTIN. Yes; that is my understanding.

Mr. HILL. As I understand, Huntsville was a very important mobilization center in the Spanish-American War, was it not Mr. Chairman?

The CHAIRMAN. I do not recall.

Mr. MARTIN. That is correct, sir.

The CHAIRMAN. I recall there was a very big camp at Chattanooga.

Mr. HILL. Yes. Now, Mr. Martin, can you tell us what other big camps there were in what is now the Fourth Army Corps Area during the past war? There was Camp Greene, in North Carolina, was there not?

Mr. MARTIN. Yes; and there was a camp at Columbia, S. C., one at Atlanta, one at Columbus, Ga.; Camp Benning, I believe, is the name of that camp.

Mr. HILL. That is a permanent camp?

Mr. MARTIN. Yes.

Mr. HILL. How far are you from Camp Benning?

Mr. MARTIN. You will see that our lines on the eastern border of Alabama run to a point called Opelika, the extreme southeastern point of our line.

Mr. HILL. How near is Benning to your power-transmission line?

Mr. MARTIN. We go to a point known as Opelika, in Alabama, and Columbus, Ga., where this camp is located, is about 20 miles to the eastward of Opelika.

Mr. HILL. Then you are within serving range of Camp Benning, are you not?

Mr. MARTIN. We are, Mr. Hill; and it has been in discussion between our company and the Columbus Light & Power Co. that we would connect our lines at Opelika with the Columbus company to better serve the needs of that section of Alabama and Georgia, giving assistance to each company when it needs it, from one system to another; in fact, we are under an arrangement with them to go forward with that connection.

As you know, during the war, there was a very large camp at Montgomery, Camp Sheridan. Our company now has extended its lines and is serving power to the Montgomery district. We do not distribute there, but it is distributed by another company, the Montgomery Light & Water Power Co., and that company furnished all the requirements for lighting and power service at Camp Sheridan during the war.

Mr. HILL. Then your company during the war and at the present time is within serving distance of the majority of the great training centers in what is now the Fourth Army Corps Area?

Mr. MARTIN. Yes. Chattanooga is within easy distance. We have a tie-line connection with the Tennessee Power Co. which easily enables power to pass to Chattanooga for any purpose that might be required there.

Mr. HILL. Now, I am not entirely clear as to the difference between primary and secondary horsepower. In my questions that I asked Mr. Worthington I had in mind primary horsepower, because I had in mind that if the Government did not need all of this 100,000 horsepower for purposes of developing fertilizer it could use it in this corps area for lighting and for other purposes. Now, can you light lamps, etc., with this secondary horsepower?

Mr. MARTIN. Yes; of course.

Mr. HILL. What is the difference, in plain words, between primary and secondary horsepower? Is there any difference except the steadiness of flow?

Mr. MARTIN. That is all.

The CHAIRMAN. Mr. Hill, that has been explained in the record, but I have no objection to having it repeated at this time.

Mr. HILL. I wanted it in this connection because my understanding of it is——

The CHAIRMAN. It is already in the record, but I think it is probably fair that Mr. Martin should again explain what the difference is.

Mr. HILL. Then for all practical purposes primary and secondary horsepower are the same except in the flow?

Mr. MARTIN. Absolutely. It is just a question of river flow.

Mr. HILL. If the United States had available during the term of this arrangement 100,000 horsepower a year, that power could be used for lighting and heating or for any other purposes in these various camps, could it not?

Mr. MARTIN. Yes, Mr. Hill.

Mr. HILL. During the war you furnished electric power to Camp McClellan?

Mr. MARTIN. Yes.

Mr. HILL. Now, at war prices how much would 100,000 secondary horsepower be worth a year? Is that a fair question or is it the kind of question that could be properly answered?

Mr. MARTIN. Well, you would have to take into the question so many assumptions as to the place of delivery, the hours of use——

Mr. HILL. Let us take Camp McClellan as an illustration.

Mr. MARTIN. And the place of its delivery, etc. I might express it in this form: In times of war this power would be very useful, but you would want in addition to this power steam power or some other power to make it permanent. You would not want to be dependent necessarily on the flow of the streams in times of war. What would happen would be that you would exercise, or the President would exercise, some part or all the power vested in him under the terms of the Federal water power act and direct us to deliver any amount from Lock 12 or Mitchell Dam or the Tennessee River that might be needed for any of those locations.

The CHAIRMAN. Mr. Hill, will you allow me to ask a question there?

Mr. HILL. Certainly.

The CHAIRMAN. As I understand it, primary power is power that is always on tap.

Mr. MARTIN. Yes.

The CHAIRMAN. And secondary power depends upon the amount of water in the river, as to whether it is available or not.

Mr. MARTIN. Yes, sir.

The CHAIRMAN. Sometimes it is available for seven months, sometimes only for three months, and so secondary power changes in volume according to the amount of water on hand, is not that the case?

Mr. MARTIN. That is true.

Mr. HILL. And am I correct in my recollection that you said under these circumstances there would be about 82 per cent of secondary power available at most times in your testimony the other day?

Mr. MARTIN. Yes; that is correct. This 100,000 horsepower is available for 82 per cent of the time, taking an average period of 30 years, Mr. Hill.

Mr. HILL. That was my understanding.

Mr. MARTIN. There have been very fine and complete records made of this Tennessee River flow, as complete as any river in the United States, and they have been plotted.

Mr. HILL. Let me ask you this further question in that connection: Can you give the committee any estimate of about how much the value of this 100,000 secondary horsepower would be delivered, say, right at the nitrate plant, per year, because you have offered this as a sort of permanent payment per year?

Mr. MARTIN. It depends altogether on how the Government would wish to set it up. The Government might set it up at once price or another and might charge one price or another to its licensee. I noticed in some testimony which was offered and which I placed in the record the other day, that in former hearings before this committee one of the Government's consulting engineers placed a value in fertilizer production at this point on this power of $7.53 per horsepower per year

Mr. HILL. That would be $753,000 per year.

Mr. MARTIN. $753,000 a year. That was the average of the entire secondary power. Of course, this is——

Mr. HILL (interposing). From your testimony the other day this is practically all the secondary power that would exist at present.

Mr. MARTIN. It would be, with the equipment which we would initially put in, 240,000 horsepower, but there will be additional equipment until we finally reach 600,000 horsepower, the full installation, and everything above 100,000 horsepower is secondary, and the Government gets the first 100,000 horsepower.

Mr. HILL. The first 100,000 of the secondary power.

Mr. MARTIN. Yes.

Mr. HILL. Your proposition divides this up into a power proposition which in my opinion it is essentially.

Mr. MARTIN. Yes.

Mr. HILL. But it also takes care of the fertilizer end by setting apart not so much nitrate, but by setting apart so much power which can be converted into nitrate.

Mr. MARTIN. Yes.

Mr. HILL. Or sulphate, or whatever is necessary.

Mr. MARTIN. That is correct.

Mr. HILL. You offer therefore this guaranteed supply of power, which can be used for fertilizer, expressing it not in terms of nitrate production but in terms of power.

Mr. MARTIN. Yes.

Mr. HILL. And am I to understand that the value of that would be about $753,000 a year?

Mr. MARTIN. The testimony, Mr. Hill——

Mr. HILL. Or would you prefer to go into that further and file a further report on that?

Mr. MARTIN. Well, I am not saying myself what the value would be for fertilizer production, but I am taking the testimony which is before the committee, and that was very exhaustively gone into at one of the earlier hearings, a hearing last year, and the value of $7.53 was placed on that power during that hearing, and by $7.53 I mean this entire block of secondary power. That which we offer the Government is 82 per cent of the time, then it reduces and goes down to 70 per cent, 50 per cent, 40 per cent, and 30 per cent. The gentleman who made the calculation as to the value of $7.53 included all

of the secondary power over and above $100,000, and placed the value of $7.53 on it. Now, if you segregate the first 100,000 of secondary power from that volume you no doubt will find it has a very much better value than $7.53.

Mr. HILL. Am I right in this interpretation or in this comparison of your offer and Mr. Ford's offer? Mr. Ford offers to take over this plant, the Government financing the completion of the dam.

Mr. MARTIN. You say our offer does that?

Mr. HILL. No; Mr. Ford's offer. Your offer contemplates your financing the completion of the dam.

Mr. MARTIN. Yes; that is correct.

Mr. HILL. Mr. Ford's offer contemplates taking over the title to Nitrate Plant No. 1 and Nitrate Plant No. 2, subject to certain reservations as to No. 2.

Mr. MARTIN. Yes.

Mr. HILL. You contemplate leaving that with the Government?

Mr. MARTIN. That is correct.

Mr. HILL. And you contemplate furnishing the Government power, which, translated into fertilizer, would perhaps be worth as much as $753,000?

Mr. MARTIN. Or might be worth $10 per horsepower or $1,000,000 a year. It depends on the times and conditions and the price at which the Government sees fit to pass it on to its assignees. I have no doubt you would find that the Government could realize $10 per horsepower.

Mr. HILL. Then under your offer you finance the water power development under the general water power act?

Mr. MARTIN. Yes.

Mr. HILL. And you leave to the Government its nitrate plants and guarantee it power?

Mr. MARTIN. Yes.

Mr. HILL. Whereas under the Ford offer, he takes the whole thing personally and the Government finances it.

Mr. MARTIN. That is my understanding, Mr. Hill.

Mr. HILL. Thank you; that is all.

Mr. MARTIN. As to this 100,000 secondary horsepower, under the calculations which have been made as to values heretofore by representatives of the Government, it might easily be expressed in terms of $10 for the fertilizer business, which means $1,000,000 a year, and over the period of years you have $50,000,000 return to the Government in the form of power.

Mr. HILL. When is this secondary power more available, in the summer or in the winter?

Mr. MARTIN. Of course, during the winter months and the spring months the river runs high and the water is very high, and the low season months are September, October, and November.

Mr. HILL. Then suppose the Government should make this arrangement and should want this secondary power for use at Camp McClellan, it would be more needed in the winter months for lighting and heating than in the summer months.

Mr. MARTIN. Yes.

Mr. HILL. And naturally would be more available during that season of the year; is not that right?

Mr. MARTIN. That is correct.

Mr. HILL. In other words, under this proposition the Government would have available in this Fourth Corps Area this secondary power as its own and then would have the reserves of your company behind it for use in case of emergency.

Mr. MARTIN. Yes, sir. They would have all of those reserves, not only as a matter usually connected with the conduct of war but as a matter of contract, by virtue of the fact that we will have two licenses issued under the terms of the Federal water-power act, which impose that specific obligation upon the licensee.

Mr. HILL. As I understand Mr. Ford's offer, if a scheme could be devised by which the fertilizer equivalent of 110,000 tons of nitrate could be made out of 25,000 secondary horsepower a year, Mr. Ford would get all the remaining horsepower; in other words, his contract does not dedicate a specific amount of horsepower to this proposition, and I do not think his representatives have yet filed an answer as to whether Mr. Ford would be willing to do that.

Mr. MARTIN. I have not seen it, Mr. Hill.

Mr. HILL. And as the case now stands, yours is in terms of horsepower and his is in terms of nitrate.

Mr. MARTIN. Yes.

Mr. FIELDS. Mr. Martin, I would like to get a little more information with regard to the two local development companies that you referred to earlier in your testimony upon this subject. I believe you said there was a company organized at Muscle Shoals and a Birmingham company whose object it was to develop Cherokee Bluffs.

Mr. MARTIN. Yes, sir; that is correct, Mr. Fields.

Mr. FIELDS. And those companies were taken over by the Alabama Power Co.?

Mr. MARTIN. Yes, Mr. Fields.

Mr. FIELDS. By whom was the principal stock in those companies owned. Mr. Martin, before they were taken over by the Alabama Power Co.?

Mr. MARTIN. I would have to go back to the old records, Mr. Fields. There were a number of people owning them. Shall I go into all the details? I would be glad to, so far as my recollection carries me, Mr. Fields.

Mr. FIELDS. Was Mr. Washburn connected with those companies?

Mr. MARTIN. He was interested in both the Muscle Shoals Co. and the Cherokee Bluffs Co.

Mr. FIELDS. Was he a large stockholder in them?

Mr. MARTIN. Yes; he was a considerable stockholder.

Mr. FIELDS. It is a fact that Mr. Washburn manipulated the transaction which resulted in the Alabama Power Co. taking over those companies, is it not?

Mr. MARTIN. Well, I would not put it just in that form. I think Mr. Washburn was one of the principals in those negotiations. The negotiations with Mr. Mitchell came up first through others than Mr. Washburn. Those negotiations came up through a Mr. Paul Brady, who lives in the city of New York. He is the gentleman who initiated the program with Mr. Mitchell, and he was interested in the matter at the instance of some of his friends who owned some interest in the Alabama Power Co. at that time. Then Mr. Mitchell, having looked into the situation of the Alabama Power Co., became interested in these two other situations in a few weeks afterwards. Mr. Washburn was one of the principals in the negotiations in transferring the interests to Mr. Mitchell; Mr. Washburn and Mr. Henry C. Jones, of Montgomery; Mr. James S. Pinkhardt, of Montgomery; Mr. W. P. Lay, of Gadsden; and Mr. Hohenburg and Mr. J. W. Worthington and Mr. Charles H. Baker. They were the gentlemen, principally, with whom the transactions were conducted.

Mr. FIELDS. Mr. Worthington, to whom you have referred, did not own a majority of the stock or a great percentage of it, did he? He was only a light stockholder, was he not?

Mr. MARTIN. I do not recall just what his stock interests were. I do not recall that, and would have to look it up to see.

Mr. FIELDS. Have any other local power-development companies been taken over by the Alabama Power Co. or the Alabama Light & Traction Co. in the Southeast?

Mr. MARTIN. Yes; there were a number of companies operating in small towns and in the larger towns of Alabama, selling light and power to communities. We operate in about 60 different towns in the State, and at different times our company has taken over lighting systems in various parts of the State, and we have brought into those communities hydroelectric service and made available power for lighting and industrial use where it never existed before.

Mr. FIELDS. Was Mr. Washburn connected with any of those companies before they were taken over by the Alabama Power Co. or the Alabama Light & Traction Co.?

Mr. MARTIN. None except those I have mentioned.

Mr. FIELDS. You mean the two you mentioned a while ago before you mentioned the others.

Mr. MARTIN. Only the Muscle Shoals Co. and the Cherokee Bluffs Co. He was connected with those companies.

Mr. FIELDS. Earlier in your testimony you stated it would be inadvisable to attempt to manufacture all the fertilizer of the country in one place, and I realize the wisdom of your suggestion, but you will agree, will you not, that unless the manufacture of fertilizer by this process is started somewhere the farmers, if they are suffering by the prices now imposed upon them by the Fertilizer Trust, will continue to so suffer unless this is started somewhere.

Mr. MARTIN. In answer to your question I would say that it is my understanding of the testimony before this committee that this nitrate plant No. 2 can not manufacture a nitrate fertilizer and compete with either Chilean nitrate or the by-product, coke-oven ammonium nitrate. I can not undertake to speak as an expert, because I have not studied the question and am not an expert on the question. I am simply restating what has been mentioned

here. It is a matter for you gentlemen as to whether there can be any real competition between nitrate plant No. 2 and those other sources.

Mr. FIELDS. There has been testimony which claimed that it could be done more cheaply, and that testimony called attention to the fact that even a duty was asked in the last tariff bill against German nitrates, and our attention was further called to the fact that Sweden is now shipping plant food around through the canal and selling it to the farmers of California, and that is plant food manufactured in Sweden by the same process.

Mr. MARTIN. I think you will find, though, Mr. Fields, particularly in Germany, that it is the Haber process that is being used. I have in my hands a review of that question from Berlin under date of the 25th of February appearing in the New York Times, in which this statement is made with regard to the great Krupp plant:

"But it was particularly interesting to note that all these giant gun lathes were being operated to capacity on straight peace production. Instead of guns they were turning huge long seamless steel tubes for Germany's nitrate industry. The famous Haber process of employing nitrogen from the air in manufacturing nitrates requires these great steel tubes as long as the biggest extant ship's guns. Just how they function is a closely guarded secret of the nitrate industry. They are set up perpendicularly in pairs connected by shorter cross tubes, but beyond this even Krupp's experts profess to know no more about the synthetic nitrate industry."

All the information which I have, and speaking purely as a layman, is to the effect that that is the process which is going to be the real process by which the nitrate industry is going to succeed in this country and abroad.

Mr. FIELDS. Are you informed as to which process Sweden uses?

Mr. MARTIN. I understand it is the arc process.

Mr. FIELDS. That process is most like the Haber or the cyanamid process?

Mr. MARTIN. The difference, as I understand, between the Haber process and the cyanamid process is in the use of power. The Haber process uses very little power and the cyanamid process uses a great deal of power.

Mr. FIELDS. How is the process used in Sweden as compared with the cyanamid process?

Mr. MARTIN. The arc process?

Mr. FIELDS. Yes.

Mr. MARTIN. The arc process uses the most power of them all, and in point of units of production today, you will find the arc process is the least used.

Mr. FIELDS. But even that being true, Sweden is using that process and is shipping its products to the United States around through the Panama Canal and selling it to the farmers and fruit growers of California.

Mr. MARTIN. Yes; and they have practically no power cost, due to the exceptional conditions under which power development is made in Sweden.

Mr. FIELDS. Of course, they are situated like we are with regard to Muscle Shoals and many other splendid water powers. They have very splendid water powers there.

Mr. MARTIN. With high heads and great rivers they are able to develop their powers at very much less cost than we can ever develop ours, at at least, some of them.

Mr. FIELDS. It has apparently been the policy of the Government for several years, beginning with the consideration of the national defense act of 1916, to provide some place for the production of nitrates for war purposes in times of stress and for fertilizer in times of peace, and it appears further that the Government settled upon Muscle Shoals as the place to carry on that production; but it seems to me, considering the proposition of the Alabama Power Co. in the light of the opinion expressed by the Secretary of War in his letter to the Congress accompanying the offer of the Alabama Power Co., that we see the finish of this policy, if the offer of the Alabama Power Co. is accepted and the recommendations of the Secretary of War as expressed in paragraph 2 of his letter, to which I have referred, are carried out.

Mr. MARTIN. On the contrary, it would seem to me, Mr. Fields, that it makes it more practicable.

Mr. FIELDS. In paragraph 2 of the letter referred to, the Secretary says:

"The company offers to furnish the Government, or any one it may designate, with free power in the amount of 100,000 secondary horsepower for the production of fertilizer and munitions of war and research in connection therewith; and if for any reason this use of the power is discontinued, the company will purchase same. The feature of the offer has the advantage of providing the Government a return on the $17,000,000 it now has invested in the water-power project."

So I understand from the Secretary's letter that he is looking at the return that would come to the Government by the Alabama Power Co. purchasing this project and paying for it, which payment would be applied as a return upon the $17,000,000 invested in the dam.

Mr. MARTIN. The Government gets a return, may I suggest, Mr. Fields, in that it receives 100,000 horsepower, whether it puts it into fertilizer production, munitions of war, or sells it; in either case, the Government gets a return. Now, I do not know just in what sense it was intended here, but it seems to us that the Government is definitely getting a return on its wartime investment, whether it converts that power into fertilizer or sends it out for commercial or other uses.

Mr. FIELDS. That might be your construction of that paragraph of the Secretary's letter, but I am frank to say that it is not my construction of it.

Now, in order to try to arrive at a conclusion as to where the Government is getting on and off in these two propositions, I have tried to figure out, as best I could, the return that the Government would get under each one, and in that calculation I have been more liberal than you were in your estimates made in reply to the questions of Mr. Hill a while ago. I took the estimate of Col. Cooper on the value of power at Muscle Shoals. I believe he placed an estimate of 1.2 mills per kilowatt hour, which would amount to $7.80 per horsepower.

Mr. MARTIN. For secondary power.

Mr. FIELDS. Yes; for secondary power.

Mr. MARTIN. What load factor do you use?

Mr. FIELDS. I have figured it out on 100 per cent load factor, and also upon what the testimony shows is the average load factor used in the United States. If the flow of the river would provide continuous power at $7.80, that would amount to $780,000 a year, and I believe you suggested a while ago that the flow of the river would afford that power about 80 per cent of the time.

Mr. MARTIN. Eighty-two per cent of the time.

Mr. FIELDS. In the calculation which I made last night and have roughly revised here, for 10 months, that would amount to $650,000 on a 100 per cent load factor, and on a 51 per cent load factor, which the testimony shows is the average load factor in all operations of this character, it would amount to $331,500, and comparing your contract with the life of the Ford lease, the Government would get a return there of $33,150,000. Now, what other return does the Government receive under your offer?

Mr. MARTIN. We will have to go back to your hypothesis a moment. The very price of $7.80 per horsepower per year is predicated on the secondary class of power and does not vary, due to the question of load-factor use. All of those factors you have taken into account, if I may suggest, Mr. Fields, when you reached the figure of $7.80 per horsepower per year were taken into account, and taking your basis of $7.80, that becomes $780,000 a year, rather than $330,000 a year.

Mr. FIELDS. All right: I will admit my inability, with my limited knowledge of the power business, to figure out in a few minutes or to take into consideration all these things to which you refer, but let us take it on the broadest possible basis that we can make it and put it on 12 months a year, with 100 per cent load factor; that would be $780,000 a year, or $78,000,000 for the life of the contract, using the same length of time as is contemplated in the Ford contract.

Mr. MARTIN. Yes, sir.

Mr. FIELDS. And that is as broad as you can possibly make it, and that is giving you every advantage and is conceding that the river flows 12 months out of each year for the 100 years?

Mr. MARTIN. Oh, no.

Mr. FIELDS. So as to furnish this 100,000 horsepower, giving you a load factor of 100 per cent.

Mr. MARTIN. We can not concede that it will flow 100 per cent of the time.

Mr. FIELDS. I know we can not, but I am giving you the advantage of that. I am conceding that only for argument's sake and am giving you that advantage.

Mr. MARTIN. We do not want the advantage, and we do not need the advantage. We do not need that assumption. We take 82 per cent of the time and that fixes the basis, and that is all we can assume. We go by the records of 30 years, and if you will go into the power business you will find that these records of 30 years are going to work out in practice, and the gentlemen

who figure out this power situation on the Tennessee River do so upon those same records. Now, taking that basis as a starting point, without any advantage given to us—and we do not think we are entitled to any advantage—82 per cent is the basis. Then you have the question of 50 times $780,000 in the 50-year period, or $39,000,000, and in a 100-year period you have $78,000,000. That is the advantage to start with.

Mr. FIELDS. That is on a 100 per cent load factor for continuous power?

Mr. MARTIN. No.

Mr. FIELDS. I beg your pardon.

Mr. MARTIN. No; that is secondary power.

Mr. FIELDS. I think if you will look into it you will find that is at $7.80 per horsepower, and I am basing my calculation upon the figures given by Col. Cooper for continuous flow.

Mr. MARTIN. I do not know of anyone, Mr. Fields, in the United States that would sell you continuous horsepower at $7.80 per horsepower per year.

Mr. FIELDS. You think that is too high?

Mr. MARTIN. No, sir; it is too low.

Mr. FIELDS. That is the figure that Col. Cooper gave.

Mr. MARTIN. That is for secondary power?

Mr. FIELDS. Yes; for secondary power, and I say, granting that the flow of the river is so continuous that it will furnish this secondary 100,000 horsepower continuously——

Mr. MARTIN (interposing). For 82 per cent of the time.

Mr. FIELDS. But if it does that for 100 per cent you can not figure out more than $780,000 a year, which would be $78,000,000 for a period of 100 years, which is equal to the period of the Ford lease.

The CHAIRMAN. Mr. Fields, will you allow me to ask a question there, and maybe I can clarify the situation? If power is furnished 100 per cent of the time, it is no longer secondary power.

Mr. MARTIN. That is correct, Mr. Chairman, and that is the answer.

Mr. FIELDS. I understand that thoroughly, but I was just making it as broad and as much in favor of the Alabama Power Co. as I could, to show what the maximum could possibly be. Then at the end of the contract you own the property under the terms of your contract, as I understand, with the right of the Government to recapture?

Mr. MARTIN. Yes; Mr. Fields, at the end of 50 years, or during the 50-year period, the licensee owns the property. If it greatly increases in value, and it is bound to increase in value, at the end of this 50-year period the Government may come in and take it over on paying the licensee his original cost, whatever in dollars that project has cost to the end of the 50-year period, without any increment or anything representing this increase in value, and even the lands, rights of way, water rights, and intangibles of that character, going value, good will, all of those elements, by the terms of the Federal water power law are excluded, except the actual, reasonable cost of those things to the licensee, so you come back at last to the net dollars the licensee has in the project, and that is the basis on which the Government may take it over.

Mr. FIELDS. But the Government must pay the licensee the value of the property as defined by you in your statement.

Mr. MARTIN. I would not say value, but the cost.

Mr. FIELDS. Yes; the cost.

Mr. MARTIN. Yes; what is known in the Federal water power act as "net investment."

Mr. FIELDS. Then in arriving at just how the Government is going to come out, we would deduct that cost from the Government's income from the Alabama Power Co. during the life of the contract.

Mr. MARTIN. No; because the Government has not suffered that at all. We do not ask the Government to put up that net investment. We advance that net investment you see. It is not a deduction. The Government has saved the net investment.

Mr. FIELDS. But the point I am getting at is that the Government would own the property at that time with its income from the Alabama Power Co. during the life of the contract, less the cost of the construction which the Government would have to pay back to the Alabama Power Co.

Mr. MARTIN. Yes; in the intervening period the Government is better off because it has saved this investment itself. It has saved the annual interest charge on that investment, which you can calculate very easily, and at the end of this period, the Government may do exactly what it may do to-day, without any added cost, namely, come in and pay the net investment to the licensee and take it over.

Mr. FIELDS. I understand, but you are not contending—I hope that the Government could recapture the property and own it in fee, and at the same time have all the income that it gained from the Alabama Power Co. during the life of the contract.

Mr. MARTIN. Yes.

Mr. FIELDS. It would have to pay the Alabama Power Co. for the property which would naturally, in the final balance, be deducted from the amount the Government had gotten from the company.

Mr. MARTIN. It would only pay that which the Alabama Power Co. had contributed in the meantime toward the capital cost of the project.

Mr. FIELDS. But you will not claim that it would own the property and still have all the income that it received.

Mr. WEATHERS. The property now there.

Mr. FIELDS. Of course, it would own the property now there. It owns it anyhow, but with the improvements put on by the Alabama Power Co.——

Mr. MARTIN (interposing). The Government would take over the improvements and everything we put there.

Mr. FIELDS. And pay you for putting them there?

Mr. MARTIN. And pay our net investment.

Mr. FIELDS. If it had $78,000,000, which I reach by allowing you 100 per cent time and 100 per cent load factor, it would, of course, deduct whatever amount that was, and the Government would say that I have the contract and have so many dollars that I have acquired.

Mr. MARTIN. That is one way of looking at it; in other words, if the Government has realized this income of $40,000,000, we will say, from power in the meantime it may turn back and use the $40,000,000 income in paying the net investment and take it over without any cost, if that is what you mean.

Mr. FIELDS. And I have figured all the advantage that could come to the Alabama Power Co. by reason of the 100 per cent time and 100 per cent load factor. Now, taking it on the other hand, for 100 years on 10 months' time and 51 per cent load factor, and I figure on 100 years, because that is the period equal to the period of the Ford lease—the Government would receive from you $33,150,000.

Mr. MARTIN. No; we can not agree as to how the question of load factor applies. I think we misunderstand each other there.

Mr. FIELDS. I am taking the benefit of each extreme. It would come somewhere between those figures, and would be somewhere between $33,150,000 and $78,000,000. It could not go outside of those two limits.

Mr. MARTIN. I do not quite understand your figure of $33,000,000.

Mr. FIELDS. That is the lowest it could possibly go, as I see it; and the other is the highest it could possibly go, granting you 100 per cent time and 100 per cent load factor.

Mr. MARTIN. No; you must remember that the price of power is increasing, too. The value of power is increasing; and, whereas it may be worth $7.53 to-day, it may be worth twice that amount 50 years from now.

Mr. FIELDS. Of course, we can not figure what the price of power will be 50 years from now, and we have to figure it on the price to-day. For argument's sake, I shall not refer further to the 10 months' flow and 51 per cent load factor, I am going to make it 100 per cent time and 100 per cent load factor.

Mr. MARTIN. Then your power is worth $25 per year, because you get primary power then, Mr. Fields.

Mr. FIELDS. But we must take into consideration here the element of secondary power, because that is what we are figuring on.

Mr. MARTIN. Then, we will go back to $7.80 per horsepower per year.

Mr. FIELDS. That will cut you below $78,000,000 a year.

Mr. MARTIN. I do not see how it can.

Mr. FIELDS. Because you are paying the Government in secondary power. You are not paying the Government in primary power. I only gave you that advantage of 100 per cent time and 100 per cent load factor in order to go to the very last limit that could be reached in your favor, and upon that basis, in the life of the contract of 100 years, the Government would recover from the Alabama Power Co. $78,000,000, and, then, would have to pay the Alabama Power Co. for what it has put into the construction work, which would be deducted from that amount.

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Mr. MARTIN. Now, we will take your assumption of 100 per cent river flow and this power being available 100 per cent of the time; that is, this 100,000 horsepower.

Mr. FIELDS. Yes.

Mr. MARTIN. Then you are dealing with power which to-day has a market value of $25 per horsepower per year or $2,500,000 a year, and in 100 years you have $250,000,000. You are then dealing with figures which carry you to $250,000,000.

Mr. FIELDS. Then let us deal with figures which can not possibly carry us beyond the real of secondary power. Let us take it at 10 months in the year with 100 per cent load factor; that would amount to $650,000 a year, or $65.000,000. That brings us within the limits of secondary horsepower. I will meet you on that proposition. At the end of 100 years the Government will have recovered from the Alabama Power Co. $65,000,000. Now, if it recaptures the property, it must pay for what you have put into the property, which would be deducted from the $65,000,000.

Mr. MARTIN. That is a matter of bookkeeping, of course.

Mr. FIELDS. And the Government would stand then with one dam, losing the use of navigation on the Tennessee River for the 100 years, because Dam No. 3 is not completed and not contemplated in the contract upon which we are basing these figures. The Government would have $65,000,000 from the Alabama Power Co. less what the Alabama Power Co. put into the construction of Dam No. 2, and the Government has $17,000,000 in there now, and it has had that amount in there during all of this time we are speaking of.

Under the Ford offer, we put in $42,000,000 additional and we recover from Ford the amortization fund of $49,000,000 and $161,000,000 in interest, or a total of $260,000,000 as against $65,000,000.

That is $260,000,000 as against $65,000,000, and we get from Mr. Ford $260,000,000 and own Locks 2 and 3, and the benefits we have had of a navigable river for a hundred years.

Mr. MARTIN. Yes; but how much are you out in doing that?

Mr. FIELDS. Forty-two million dollars, in addition to what we would be out in supplying the Alabama Power Co.

Mr. MARTIN. No; you are out $1,275,000,000 on your basis of calculation, on 100 years, in doing that.

Mr. FIELDS. No; if we go back that far you want 4 per cent on the $17,000,000.

Mr. MARTIN. We are willing to balance figures on that, and the Government must credit itself with the annual savings which it otherwise be out to the bondholders, because the Government does not have any additional money to put out in the 100 years under our program.

Mr. FIELDS. It has the $17,000,000 in the dam?

Mr. MARTIN. We will let you make that calculation and give the Government credit. The Government must charge itself this annual return in the form of the value of this power. It has that income, and it has no outgo by way of interest charges or any further investment in it. It is saving to the Government over the period of its net annual charge for maintaining and operating these dams and gates as is not done in the case of another proposition.

Mr. FIELDS. Mr. Ford provides for payment of $55,000 a year, so that those two things balance one against the other.

Mr. MARTIN. If you will look at Col. Cooper's estimate, you will see that that amount is vastly insufficient to take care of those annual charges.

Mr. FIELDS. Right there, since you have referred to Col. Cooper's estimate, of course, I understand you are basing your calculation on the same premise that Col. Cooper uses, that the Government should charge 4 per cent interest on everything it puts into those charges.

Mr. MARTIN. You are doing that.

Mr. FIELDS. Would you apply that to all irrigation and river and harbor projects? The Government has not yet adopted that policy. It seems to me that any calculation we can make must be based upon the policy of the Government at this time, and the Government has no such policy at this time.

Mr. MARTIN. I will accept your premise and answer you by saying that if that is not the policy of the Government, neither can you say that an annual fund of $55,000 could be credited with an annual interest of 4 per cent for 100 years. If you are going to adopt that policy, then apply it consistently. How can you create an amortization fund and put it on the books of the Government at 4 per cent and say in 100 years it is going to amortize the principal unless you have the policy?

Mr. FIELDS. Under the Ford contract we would have navigable water on the Tennessee River for 100 years, and that would be worth something, would it not?

Mr. MARTIN. It will be worth something, and we will go ahead right now, Mr. Fields, and pay you more interest than you would otherwise get if you would put up the money to build Dam No. 3, and we will take it over and maintain it and operate and pay you more interest than anybody else has offered to pay you.

Mr. FIELDS. It is strange you did not include that in this offer.

Mr. MARTIN. We have not asked for Government money, but we are willing to privately finance it whenever business conditions in this territory will justify the private financing of this project. In the course of 10 years it will be built, and in another program, which is before you, it is not going to be built within 6 or 7 years; you will not get around to it under 6 or 7 years, and in 10 years it can be privately financed.

Mr. FIELDS. The only way you can discredit the comparison I have drawn is to charge 4 per cent interest for 100 years on all the money the Government puts into the proposition.

Mr. MARTIN. I am not discrediting that at all, Mr. Fields, I am merely saying let us be consistent. If you are going to say the Government has an annual outgo, and there is a balance against the Government annually—is not that true? There is a balance against the Government every year between its income and outgo?

Mr. FIELDS. Yes; I assume that is true.

Mr. MARTIN. We propose that the Government shall not have any outgo.

Mr. FIELDS. It already has an outgo of $17,000,000.

Mr. MARTIN. We propose to give you a return on that, and we stop right there with the outgo.

Mr. FIELDS. If we charge you that 4 per cent interest on the $17,000,000 that will result in quite a different figure so far as concerns what the Government receives from the Alabama Power Co. at the end of 100 years.

Mr. MARTIN. Taking your figure at $7.80, what is 4 per cent on $17,000,000? It is $680,000 a year, and according to the figures you have used, the $7.80, the Government will get over 4 per cent out of this $17,000,000 annually. You have over $100,000 more than your annual interest charge. You have got to give the whole situation that credit as you go along.

Mr. FIELDS. Upon the same proposition, by putting in the additional $42,000,000 received from Mr. Ford, we will get there, from you, on a 10-month's flow and a 100 per cent load factor, which I am only conceding for the sake of the argument—we would get $650,000 a year, and that would be $65,000,000 during the period of 100 years, and that is all we would get from you, and if we recapture the property we must deduct from that the amount you have put into the property. Then we have been giving you the benefit of a Government contract for 100 years, whereas under the Ford proposition we have already got $17,000,000 in the plant, and by putting in $42,000,000 we would have a navigable river for 100 years and the nitrate plant maintained at an expense of $3,500,000 a year; that is, a deterioration of 5 per cent, and an account for maintenance, which the War Department figures at $200,000 a year, and $260,000,000 from Ford in interest and amortization fund. So it looks to me like there is a wide difference between the two propositions, if I am correct. And I want to be correct on this proposition; I want the facts.

Mr. MARTIN. Let us take navigation.

Mr. FIELDS. That is not accounted for in the Ford proposition.

Mr. MARTIN. When we come to the question of navigation, it is more complex, and it is important. In order to get the navigation complete you have to build Dam No. 1; that is, below the Wilson Dam.

Mr. FIELDS. It has been estimated it will cost $1,400,000 to do that.

Mr. MARTIN. That is not involved in this situation at the moment. That is an appropriation which you must make independent of this matter. Then you have the Wilson Dam as a part of the navigation scheme. It will carry the water back 17 miles. Then you have to build Dam No. 3 to carry that navigation back, I think, 65 miles. Then you have to build from five to seven more dams in the next stretch of the river between the headwaters of Dam No. 3 and Hales Bar on the Tennessee River to make your all-round navigation. I do not know what those estimates are; perhaps they amount to ten or fifteen million

dollars. You have all those things to do. What I say is that then Dam No. 2 can be taken care of by financing in the usual business way of inviting capital to come in to do it. Dam No. 3 can be taken care of in the same way. The Government probably will find it necessary to finance these other dams on that river because the water power does not justify privately financing other water powers on that river.

When you come into the question of navigation you have to consider it as a whole. By building Dam No. 2 and Dam No. 3 you do not complete the scheme of navigation, but it would be a matter of millions of dollars which would have to be put into those other dams.

Mr. FIELDS. While it does not appear in the Ford offer, Mr. Ford's engineer has stated that it is Mr. Ford's intention to build these dams in the upper reaches of the river.

Mr. MARTIN. I am not speaking of the upper reaches; I am speaking of the stretch from Chattanooga to Muscle Shoals. You will find you have to do a great deal of river improvement in that stretch.

Mr. FIELDS. But Dams Nos. 2 and 3 will put us into the heart of the raw-material regions there, will they not?

Mr. MARTIN. No; it will improve a stretch of the river, just as Dam No. 2 improves a part and also Dam No. 3 will improve a part.

Mr. FIELDS. Dam No. 2 would put the water back 14.7 miles and Dam No. 3 would put it back 63 miles.

Mr. MARTIN. Then, you have to build the other dams before the navigation scheme is completed.

Mr. FIELDS. It is fair to say that the completion of Dams. Nos. 2 and 3 will make quite an improvement in the navigation of the river by carrying it over Muscle Shoals, which has always been a great impediment to the river.

Mr. MARTIN. You will find on examining the profile of the river as shown in Document 1262, Sixty-fourth Congress, first session, plate No. 1, that the scheme of improvement requires several dams between Dam No. 3 and Hales Bar. Hales Bar is the large dam built just below Chattanooga.

Mr. FIELDS. How far is it from Dam No. 3 to Hales Bar?

Mr. MARTIN. About 150 miles.

Mr. FIELDS. How many locks are recommended by the Government engineers from Dam No. 3 to Hales Bar?

Mr. MARTIN. They are Hobbs Island Dam, Buck Island Dam, Mink Creek Dam, Bellefonte Dam, and Widows Bar Dam—that is five dams in that stretch, and that will carry the water level to the Hales Bar Lock and Dam.

Mr. FIELDS. It will provide for a 6-foot draft. But the river, in the absence of these dams, is navigable a great portion of the year, or would be navigable a great portion of the year if Muscle Shoals were supplied with Locks 2 and 3, would it not?

Mr. MARTIN. Yes; that is correct, if you also add Lock No. 1. I believe the Widows Bar Dam is now under construction, or at least one of those dams is now under construction. Of course, the navigation question is itself important and if the Wilson Dam is completed, somewhere along the lines we have suggested, by a licensee under the Federal water power act, in the course of five years' private capital will be ready to undertake the next one, because of the power feature of the project, and if the Government wants to undertake that one to-day, on a basis which is better than anything that has been proposed, the Government can do it to-day. All of those interest charges that the Government is now proposing to meet on this $50,000,000 of new capital; you have to bear in mind you have to balance that in the whole equation to see where the Government comes out.

Mr. FIELDS. Of course, if we follow the figures suggested by you and Col. Cooper the Government has got to depart from its policy.

Mr. MARTIN. I am speaking of the $50,000,000 of new money; excluding the amount of interest you have $50,000,000 of new capital to put into these two developments now.

I would like to say the completion of the Wilson Dam with a lock restores navigation upon that river as it existed before the dam was constructed; in fact, it improves the condition of things. There is a canal which has long been in existence, and which goes around the remainder of the Muscle Shoals district. Carrying the improvement then from the upper river into the pool created by the Wilson Dam you get exactly the same navigation with the Wilson Dam completed; in fact, you get greatly improved navigation with the Wilson Dam completed over that which existed before the dam was begun.

Mr. FIELDS. You have a pool for 14 miles above, and when you get up there you are no better off.

Mr. MARTIN. There is a Government canal there.

Mr. FIELDS. Your statement suggests another question. I believe in your proposition you propose to operate the locks during the period of your contract, whereas Mr. Ford proposes to make a cash allwance to the Government of $55,000 a year for the operation of the locks.

Mr. MARTIN. No. Here is the situation: We do not propose to operate the locks, and neither does Mr. Ford. We propose to furnish power to operate the locks, and so does Mr. Ford. We propose to maintain the power house and dam. In the case of the Ford proposal, he proposes to operate the power house and maintain the power house. Our proposal goes further, and we undertake to operate and maintain the dam gates in addition. Mr. Ford proposes to give you a fixed sum of $55,000 a year. We propose to undertake the full burden and the hazard.

Mr. FIELDS. But the difference there is this: The expense of operating these gates with Dam No. 2 only constructed would not be as great as if Dam No. 3 were also constructed, would it?

Mr. MARTIN. I do not know that it makes any great difference as to the risk. It is a matter of risk. Do you mean——

Mr. FIELDS (interposing). I mean the actual expenses of operation, of doing it.

Mr. MARTIN. I can not see that it makes very much difference.

Mr. FIELDS. There would not be very much navigation.

Mr. MARTIN. We are speaking of two different things, are we not? The expense of operating a lock is in any case an expense for the Government to take care of. The expense of operating and maintaining the dam and the gates on the dam, not the lock gates, is a thing which is wholly outside of the question of navigation whether No. 3 is in or out.

Mr. QUIN. Mr. Martin, these questions I am going to ask you are based on the fact that we are considering you as an outsider, the same as Mr. Ford, in this proposition. This is an affirmative offer of yours, and of course the question of the contract would be irrelevant here. But I think it is necessary for the record to show who your company is for the benefit of our colleagues who are not here.

You admit, and Poor's Manual shows, that the Alabama Power Co. is owned by that Canadian corporation called the Alabama Traction, Power & Light Co. (Ltd.); is that correct?

Mr. MARTIN. Not expressed just in that language. The ownership of a company is represented by its securities, whether they be stock or whether they be bonds. We have outstanding large issues of bonds and stock. Taking those security issues as a whole, there are largely more outstanding bonds and obligations of that character than of stock, and about 65 per cent of our company is owned in America and 35 per cent abroad, as I stated the other day.

Mr. QUIN. Poor's Manual on public utilities shows that all of the common stock and the voting stock of the Alabama Power Co. is owned by this Canadian corporation I mentioned.

Mr. MARTIN. I do not think it is exactly expressed in that way, because it is not quite correct.

Mr. QUIN. Wherein have I misstated it?

Mr. MARTIN. We have some 15,000 or 20,000 shares of 7 per cent preferred stock, which ranks pari passu with the common stock, which ranks in all other respects with other stock except that it is preferred in dividends. There is a very large part of our preferred stock held by the public in Alabama. It ranks along with the common stock. In addition to that you will find in Poor's Manual information about our other security issues, other than stock.

Mr. QUIN. What stock votes?

Mr. MARTIN. The preferred and the common stock votes. Under our charter the preferred stock votes identically with the common.

Mr. QUIN. How much common stock have you outstanding?

Mr. MARTIN. Our common stock outstanding amounts to $18,751,000.

Mr. QUIN. How much preferred stock?

Mr. MARTIN. It is about $2,000,000.

Mr. QUIN. Then you have about $16,000,000, approximately, more in common stock than in preferred stock?

Mr. MARTIN. Yes.

Mr. QUIN. With that understanding——

Mr. MARTIN (interposing). That common stock is voted—the direction is given for voting that stock, Mr. Quin, by a board of directors of the Canadian company, although as I recall, Mr. Quin, either 9 or 10 of them live in this country and 3 live abroad. So it is entirely in the control, or three-quarters of the membership of the board who control this stock are American citizens. A majority of the directors of the Alabama Power Co. live in the State of Alabama.

Mr. QUIN. What is the function of the Canadian corporation mentioned; what does it do; what line of activities is it engaged in?

Mr. MARTIN. It came about, Mr. Quin, because when we began this work in 1912 we could not get the American investor to put his money into the enterprise. We had to get money to go forward. Then we organized a company in Canada which might issue its securities, and its securities would be issued in a form to appeal to an English or foreign investor, wherever he might be. But it was a vehicle through which we were to obtain funds, anyone who might desire to invest in those securities. Those securities were issued and sold and funds obtained for that purpose by that Canadian company down to the outbreak of the World War. At the outbreak of the World War, or after the outbreak of the war, we had to entirely change our program, because we could not get money from abroad for American enterprises. After the World War we reorganized the position of the companies so far as it involved the obtaining of funds, and our securities since then have been entirely sold in America, so that to-day the situation is just the reverse of the situation as it existed in 1914.

Mr. QUIN. What other function does this Canadian corporation I have referred to perform?

Mr. MARTIN. None. It is really a company which has no function in the situation at the moment.

Mr. QUIN. It is a holding corporation?

Mr. MARTIN. It was organized with that view, and with the view of obtaining funds with which to make these investments in Alabama.

Mr. QUIN. Coming to your proposition, you start out with an offer of $5,000,000 for the Government's equity in the Gorgas transmission line, erected at a cost of $4,670,000, for the steam plant No. 2, which cost $12,326,392, and for the $17,000,000, which was the amount the Government expended on Dam No. 2, or the Wilson Dam. That aggregates a cost to the Government of $34,002,392. To take that over you offer—and, by the way, there is more in that. You include the construction plant, and, of course, include the equipment the Government has at Dam No. 2.

Mr. MARTIN. That is part of the $17,000,000.

Mr. QUIN. That is a part of that, and is not aside from it?

Mr. MARTIN. No.

Mr. QUIN. The Government figures two or three million dollars worth of tools and equipment in that plant in the $17,000,000?

Mr. MARTIN. Yes.

Mr. QUIN. There is no doubt about that?

Mr. MARTIN. The record shows everything the Government has expended in that situation as represented by $17,000,000, whether it be the construction plant or a permanent property, wherever it is. You spoke of $4,000,000 representing the cost of the transmission line.

Mr. QUIN. I said the Gorgas plant and transmission line, the Government's equity in that. That is what they say.

Mr. MARTIN. I accept your figures of $34,000,000 as representing the Government's investment, or the Government's war-time investment in those projects. Let us see on the other side what you get. You get $5,000,000 in money; you get 100,000 horsepower.

Mr. QUIN. Let me bring that out, because I want the record to show——

Mr. MARTIN (interposing). Then I can not answer your question.

Mr. QUIN. But I am going to be fair with you. I want to analyze it in my own way. That represents the outlay the Government made; whether it is worth it or not, we are not passing on at this moment.

Then you are to construct at the Government's expense a lock at Dam No. 2, according to your offer?

Mr. MARTIN. Yes.

Mr. QUIN. Col. Cooper estimated that to be $4,500,000. Let us assume that is correct. It may take the whole $5,000,000.

Mr. MARTIN. If you are willing to agree on what it will cost, I will agree with you that it will cost less than $4,500,000.

Mr. QUIN. Let us take the estimate to which he testified. Was he not the engineer who designed the dam?

Mr. MARTIN. I do not know; but that possibly included the locks at both No. 2 and No. 3.

Mr. QUIN. No; we have another lock up there, and whatever the estimate was as to what it would cost for navigation, is immaterial here.

Mr. MARTIN. I think you will find that the estimate of the Secretary of War is $2,500,000, as I recall.

Mr. QUIN. I think, of course, that Mr. Cooper was rather extreme in his figures.

Mr. MARTIN. We are willing to trade on your figures, but we think the Government would come out a lot better if you would leave that to the engineers. I think you will find it will be nearer the Secretary of War's figures of $2,500,000.

Mr. QUIN. I hope it would; but Mr. Cooper was very positive in his statement before the committee. If he is correct, then there would be $500,000 which the Alabama Power Co. would owe the Government. When would you start to pay that? The natural presumption is it would be after the completion of the lock, would it not?

Mr. MARTIN. I think it is most likely we would pay the whole amount immediately, because that is the way we would have to finance it.

Mr. QUIN. You mean before you started?

Mr. MARTIN. Yes.

Mr. QUIN. You would be doing an entirely new thing in finnacing, would you not?

Mr. MARTIN. I think that is the way it would work out.

Mr. QUIN. That would not be a good business way to proceed, would it, when you can not tell definitely what it would cost for the lock?

Mr. MARTIN. My idea is we will agree with the engineers on what the cost would be, what really represents the cost of the locks. The Government engineers say the cost is $2,500,000, and if we agree on that cost of $2,500,000, that settles the question. We would pay the balance as soon as we undertook the work.

Mr. QUIN. Then the Government would be required to give you title to all its equity in the Gorgas steam plant, the Warrior plant, and the transmission line to Muscle Shoals. It would be required to give you title to the steam plant No. 2 at the nitrate plant at Muscle Shoals. It would be required to give you title to Dam No. 2, or the Wilson Dam, would it not?

Mr. MARTIN. No; Mr. Quin. As a matter of good business, I am sure the Government engineers and its counsel would not transfer the title until the purchase money was completely paid.

Mr. QUIN. I am not speaking of that; that is your proposition.

Mr. MARTIN. But the title will pass only from the Government on payment of $5,000,000, or the balance that may be due.

Mr. QUIN. This is what you say in section 5 of your offer, on page 4: "The Government to transfer to the licensee the Wilson Dam property represented by its investment and commitments to date, free of liabilities and unincumbered, including the construction plant. The locks and navigation structures to be conveyed to the Government in fee on completion of construction. That same language applies to these other plants, does it not?

Mr. MARTIN. No. You will find here, that while it is not expressed in terms of the legal, final terms, unquestionably the Government would not convey its property under paragraph 3, the steam plant property, until the full purchase money is paid.

Mr. QUIN. I am assuming you are going to pay the money; that is a requirement in the Alabama Power Co.'s proposition.

Mr. MARTIN. We do not ask for any title until we pay.

Mr. QUIN. I am assuming you are paying cash, and when that cash is paid——

Mr. MARTIN (interposing). Then we take the title.

Mr. QUIN. You have the title to all these properties I named, and the only thing the Government has left is nitrate plant No. 2; is that not true?

Mr. MARTIN. No. 1 and No. 2.

Mr. QUIN. If Col. Cooper's assumption is correct, the Government would get $500,000 in cash and you would get all those properties, and in addition to that you would give the Government 100,000 secondary horsepower for the term of 50 years. That is your proposition?

Mr. MARTIN. No. In the first place, you have to remember—I believe if you will look at Mr. Cooper's testimony; I do not recall one way or the other, but I do not think it is possible that his testimony shows that the locks at Wilson Dam will cost $4,500,000.

Mr. QUIN. I may be wrong about that; but if I am wrong, I will assume that, anyway.

Mr. MARTIN. Why not assume it to be $10,000,000 or $15,000,000?

Mr. QUIN. There is no testimony of that kind.

Mr. MARTIN. The testimony of the Secretary of War is that it will be $2,500,000.

Mr. QUIN. He is like us, he is a layman, and he must have gotten his information somewhere else.

Mr. MARTIN. If the Government does not want to put in the lock the Government gets the full $5,000,000; that is all. The Government does transfer the title to this steam plant and equipment on the payment of $5,000,000, or the balance of $5,000,000. It does transfer also the Wilson Dam property; but I would like for you to take into account at this moment section 13 of the Federal water power act of June 10, 1920, which fixes the liabilities and conditions under which a licensee shall commence and complete construction of a project. I will hand that section to the reporter so that it may be set out in the record.

(The section referred to is as follows:)

"SEC. 13. That the licensee shall commence the construction of the project works within the time fixed in the license, which shall not be more than two years from the date thereof, shall thereafter in good faith and with due diligence prosecute such construction, and shall within the time fixed in the license complete and put in operation such part of the ultimate development as the commission shall deem necessary to supply the reasonable needs of the then available market, and shall from time to time thereafter construct such portion of the balance of such development as the commission may direct, so as to supply adequately the reasonable market demands until such development shall have been completed. The periods for the commencement of construction may be extended once, but not longer than two additional years, and the period for the completion of construction carried on in good faith and with reasonable diligence may be extended by the commission when not incompatible with the public interests. In case the licensee shall not commence actual construction of the project works, or of any specified part thereof within the time prescribed in the license, or as extended by the commission, then, after due notice given, the license shall, as to such project works or part thereof, be terminated upon written order of the commission.

"In case the construction of the project works, or of any specified part thereof, have been begun but not completed within the time prescribed in the license, or as extended by the commission, then the Attorney General, upon the request of the commission, shall institute proceedings in equity in the district court of the United States for the district in which any part of the project is situated for the revocation of said license, the sale of the works constructed, and such other equitable relief as the case may demand, as provided for in section 26 hereof."

Mr. MARTIN. The Secretary of War very correctly calls attention to those provisions. If we do not commence construction of that project within the time fixed, the Federal Water Power Commission has to write us a letter stating that the license is canceled, and it is canceled, and if we do not complete the construction in the time fixed, unless there is good cause shown, the Attorney General, upon the request of the power commissioner, may take the whole property away from us before we go on it.

I also call attention to other provisions of the Federal water-power law safeguarding the public interest.

1. Excess profits from the water power must be paid to the United States, whether they are profits of a public utility or a private user. (Reg. 18, sec. 10d.)

2. The franchise is limited to 50 years (sec. 6), conditioned upon acceptance of all the terms and conditions of the act.

(*a*) The right of the United States or any State or municipality is expressly reserved to take over by condemnation proceedings and maintain and operate the project at any time during the 50 years license period upon payment of just compensation to the licensee therefor. (Sec. 14.)

(*b*) At the end of the period the right is reserved to the Government to take over the project upon payment of net investment by the licensee, but not to exceed its fair value. (Sec. 14.)

(*c*) At the end of 50 years, in event the Government does not exercise the right to take over the project, preference is given to applications by States or municipalities. (Sec. 7.)

(*d*) No preference right for renewal of the franchise or any proprietary claim for power is secured to the licensee. If a license is renewed, it must be under the then existing law and regulations. (Sec. 15.)

3. The licensee can not execute a transfer of any right secured under the license or of property under the license without the written approval of the power commission. All transfers or assignments, whether by judicial sale or foreclosure, must be subject to the conditions of the act. This is construed by the present power commission to extend to a lease of any property under license. (Sec. 8.)

4. The licensee is required at its own expense, under the supervision of the power commission at all times, to maintain the project adequate for purposes of navigation and efficient operation in the development and transmission of power, must make necessary renewals and replacements and maintain adequate depreciation reserves. (Sec. 10c.)

5. The licensee is required to provide free of cost, power for operation of all navigation facilities (sec. 11c), and authority is reserved in the Government at all times to prescribe regulations governing control of the pool level and other regulations in the interest of navigation, including maintenance of operation of necessary lights and signals. (Sec. 18.)

6. All power sold from the project by the company regarding the service rendered its customers and its rates and charges of payment therefor are at all times subject to regulation by duly constituted public authority. (Sec. 19.)

All power sold in public service entering into interstate commerce must be "reasonable, nondiscriminatory, and just to the customers, and all unreasonable discrimination and unjust rates or services are hereby prohibited and declared unlawful."

7. After 20 years of operation, amortization reserves are required out of surplus earned thereafter, if any, not in excess of a specific reasonable rate of return upon the actual, legitimate investment to be applied, in the discretion of the power commission, in reduction of the net investment of the licensee. (Sec. 9d.) This rate has been fixed by rules and regulations of the power commission.

8. The licensee is required to make equitable contribution for benefits accruing to it from headwater improvements either by storage reservoirs or otherwise, whether done by other licensees or by the Government. (Sec. 10f.)

9. "Combinations, agreements, arrangements, or understandings, expressed or implied, to limit the output of electrical energy, to restrain, direct or to fix, maintain or increase prices for electrical energy or service are prohibited." (Sec. 9h.)

10. The right is expressly reserved to the United States at any time, in the opinion of the President, to take over, when the safety of the United States demands, the project for manufacturing nitrates for "manufacturing nitrates, explosives, or munitions of war or for any other purpose involving the safety of the United States," but involving a liability only for just and fair compensation for use of the property taken, to be determined by the Power Commission upon a basis of a reasonable profit to the licensee in peace time, plus the cost of restoring the property to as good condition as when taken, less a reasonable value for improvements made by the United States that are serviceable and valuable to the licensee. (Sec. 16.)

One of the other pending offers requires the Government to protect the company from losses by such use and to return the property in as good condition as received, plus reasonable compensation for the use thereof.

11. The United States is vested with authority to revoke the "license or to remedy or correct by injunction, mandamus, or other process any act of commission or omission in violation of the act or lawful regulation issued thereunder."

Mr. QUIN. I am assuming you are going to do all these things. As between the Government and the Alabama Power Co., the title to everything except the Wilson Dam is given when you complete the construction mentioned there, with the exception that the Alabama Power Co. is to furnish 100,000 secondary horsepower

to the Government for any purpose the Government may see fit to use it for. That is true, is it not?

Mr. MARTIN. Yes.

Mr. QUIN. As to the value of that to the Government no man could say, except problematically. Then, under your proposition, you skim off the cream and leave the Government the whey, do you not, in plain language?

Mr. MARTIN. No, sir; the Government gets a lot of cream, because it saves at least $2,000,000 a year in the form of an outlay in interest which it would otherwise pay; it saves its annual losses by way of maintaining and upkeeping the dam and the gates. You have to remember those things in a hundred years would amount to a great deal of money. Then it has the two nitrate plants, also.

Mr. QUIN. And the Government would be at the expense of maintaining and keeping up the nitrate plant in stand-by condition. You do not pretend in your offer to have anything to do with that.

Mr. MARTIN. The Government is going to get this $5,000,000, and 4 per cent interest on that is $200,000 a year, and you will find that is practically a sufficient sum to maintain the nitrate plants forever.

Mr. QUIN. With that nitrate plant being shut off from the coal fields, 88 miles away, and with the steam plant, the reserve power which would be right there on the ground, that is given to you, do you not think it would be a rather ridiculous attitude for the Congress to practically abandon the real intent and purpose for which that plant was constructed by accepting the offer of the Alabama Power Co.? I am not talking from any other viewpoint but that one viewpoint. It has been stated what the purposes were, and you know them as well as the committee.

Mr. MARTIN. No; to the contrary, you would be realizing the purpose for which the development was undertaken; namely, to get waterpower for the operation of this plant. You have the two nitrate plants, and we propose to you to keep them. We say to you keep the nitrate plants and we will deliver to you, in lieu of the steam-plant equipment, power which will be sufficient, and which you may use in the manufacture of fertilizer, and that power you have in lieu of your steam plant equipment, and with that you may operate these nitrate plants.

Mr. QUIN. Yes; and they would be handicapped to the extent of knowing that they could not get any primary power and that they would be in the hands of the Alabama Power Co. for the procurement of the secondary horsepower, which you say is procurable about 82 per cent of the year.

Mr. MARTIN. Mr. Quin, no one is in the hands of a public utility. Its rates are regulated by a public service commission, and if no public service commission exists in a State, then they are regulated by the Federal Power Commission. We have no voice except to initiate rates. The public authorities themselves fix the rate. With this great steam plant, with these other hydroelectric plants in the immediate vicinity, and in many other portions of the State, you have a direct call on all the primary power that anyone would ever need at rates that are reasonable.

Mr. QUIN. Mr. Martin, according to the evidence produced here, the Alabama Power Co. has practically all of the available sites there, outside of this site and site No. 3.

Mr. MARTIN. I do not know that that is the evidence, but I am speaking of whatever power there may be developed. Whatever power is developed and transmitted to the user is transmitted at rates which by law must be fair and reasonable.

Mr. QUIN. That is true, but the evidence shows that your company has already, through lease or acquirement, gained control of practically all of the available water power in that State or territory.

Mr. MARTIN. Whatever developments we have made in this situation have reduced the cost of the power to the user from 3 cents, which prevails in your State, Mr. Quin, to about 8 mills in ours, and if you take the powers which exist in Alabama, Georgia, and Tennessee, producing as they do a billion and a half kilowatt hours a year, what would it cost if we had those rates prevailing in Mississippi? It would cost the consumer $45,000,000 a year.

Mr. QUIN. But they have no water power there.

Mr. MARTIN. That is true, and at these same sites the public industries are going to pay approximately $12,000,000 for that same power, a net saving to the public in those States over the rates which prevail in your own State of over $30,000,000 a year. You have no water power. The effect of these water powers which have been developed is to reduce the rates to the public and to create for the public a great advantage which realizes itself in industrial development

and your State will realize it, and other States will realize it in proportion as the water power industry is developed, and the lines are built to carry power into the different States.

Mr. QUIN. Do you believe any representative of the Government ought to recommend a monopoly of a great public utility like that; that is, a natural resource of that kind?

Mr. MARTIN. It is a resource that can be developed and can be transmitted to the public, and it can best be developed in great units and a great system combining the water powers in different water sheds can give the public advantages which come from low seasons in one place and flood seasons in another in such a way as you can not otherwise realize those great advantages for the public.

Take first your own Army engineers. The Engineer board, headed by Col. Keller, have transmitted a report to Congress, which I read to you, in which they have told you that the only way in which Muscle Shoals will ever realize its true economic value is by the connection of that water-power development with the development in other watersheds.

Mr. QUIN. But they do not recommend that one corporation should own them all?

Mr. MARTIN. No; one company can not own them all. That report recommended the interconnection of this system, this development, with the system of all the companies, if you please.

Mr. QUIN. There are several of them down there, and five of those concerns wrote a letter, dated June 24, 1921, to Gen. Beach, the Chief of Engineers.

Mr. MARTIN. Several of them did.

Mr. QUIN. They said this secondary horsepower would be of no practical value. Were they correct in that statement to the War Department?

Mr. MARTIN. I do not put it that way. I do not think they made just that statement, Mr. Quin.

Mr. QUIN. Here is their language.

Mr. MARTIN. Whatever statement they made.

Mr. QUIN. This is what they say: "The 10 months' secondary power which it is possible to produce at Muscle Shoals has little or no commercial value." What do you say about that?

Mr. MARTIN. Our views are expressed in our letter of May 6, 1921, in which we take the view that this development has a commercial value and had its true economic place in southern affairs, and if the Government desired to go ahead with that development in a way to make some of the power available to the public, we were prepared to go forward with it. We know that power has great value in connection with the systems of other companies in that part of the country.

Mr. QUIN. You take issue with those other water-power companies in that part of the country who wrote that letter I referred to?

Mr. MARTIN. We stand on the letter we wrote to the Chief of Engineers. We have stated the situation; we know that our letter is correct; we know there are great public advantages which will come from carrying out projects along the lines of that letter.

Mr. QUIN. You do not indorse that letter those other gentlemen wrote?

Mr. MARTIN. We stand on the letter we wrote, and as I explained to you, our letter expresses our views. If those gentlemen expressed those views, they do not know enough about the situation down there.

Mr. QUIN. All I know is that it was presented to the committee and appears on page 114 of the hearings.

Mr. MARTIN. If those views are in conflict with our views, we stand on our position, and we show our good faith by telling you that we are ready to procure the money to complete the development without any Government expense. That is the best guaranty that we can give you.

Mr. QUIN. Since you have mentioned that, Mr. Martin—it will naturally come up on the floor of the House—therefore I will ask you how the Alabama Power Co. will be able to do this? This is a pretty big undertaking, as proposed in your offer. How are we going to answer that question?

Mr. MARTIN. We realize that it is a big undertaking, Mr. Quin, but as a company that is established as a going company and is selling power to the public, having 60,000 consumers of their energy, direct and indirect, that has a fixed position in the money market, has a fixed position by which it can go out and sell its securities to most of the public. We have a power development

now, and we issued and sold approximately $10,000,000 worth of securities in the year 1921. We first make a program which is sound——

Mr. QUIN (interposing). What time of the year did you sell those?

Mr. MARTIN. During every month in the year we were selling them. We sold some in July, the principal part were sold in December and January.

Mr. QUIN. What amount did you say that was?

Mr. MARTIN. About $10,000,000.

Mr. QUIN. Why is it that you did not make an offer about the time Mr. Ford did, when the War Department called for it?

Mr. MARTIN. You have expressed it somewhat in your reference to the fact that the sum of money involved is very large. When we come to realizing large sums of money, the principal months in which we have realized those large amounts from the sale of securities have been the months of December and January, and the money markets did not permit of our going out and saying we could raise this sum of money in the early part of the year. But the financial conditions in this country have been improved now, and long-term securities may be marketed now to a greater extent on a better basis than they could 30 days ago, or even 60 days ago.

Mr. QUIN. Would your company depend for the carrying out of its contract upon the sale of its securities, or has it already a guaranty that the money will be advanced through other enterprises or holding companies?

Mr. MARTIN. No other enterprises are connected with us. There is no utility connected with our undertaking; there is no other enterprise, no other industrial enterprise, connected with our proposition. We have gone into it very fully with our associates in the banking business, who are ready to assist us in finding funds for developments, and we are satisfied that this project can be set up in a sound business way and that we can sell our securities on the face of it.

Mr. QUIN. Your proposition would, of course, leave the Government helpless as to navigation, except for the canal that is there.

Mr. MARTIN. I think that I am right in saying that the canal leads from the upper river into this pool; does it not, Judge Almon?

Mr. ALMON. The canal that was put in there has been there for many years.

Mr. QUIN. The only way to have the navigation contemplated would be to build the Dam No. 3 and the other smaller dams above that you mentioned this morning?

Mr. MARTIN. Yes; and Dam No. 1. That is downstream from Dam No. 2

Mr. QUIN. This river at the point of Muscle Shoals flows in an easterly and westerly direction, does it not?

Mr. MARTIN. Approximately.

Mr. QUIN. About how far from there is it that it turns back toward the Ohio River?

Mr. MARTIN. Thirty or forty miles; it goes in a northwesterly direction.

The CHAIRMAN. The hour of half past 12 has arrived, when we usually take a recess, and if you will come back at 2 o'clock, Mr. Martin, we will appreciate it. You have been very patient and very kind.

Mr. MARTIN. I think the committee has been very patient with me, Mr. Chairman.

(Thereupon a recess was taken until 2 o'clock p. m.)

AFTER RECESS.

The committee met, pursuant to recess, at 2 o'clock p. m.

ADDITIONAL STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO.—Resumed.

The CHAIRMAN. Mr. Martin, Mr. Quin would like to ask you a few more questions.

Mr. QUIN. Mr. Martin, you stated that for the purpose of carrying out your proposition to the Government you would raise the money through floating your securities, bonds, or whatever method would be adopted by your company.

Mr. MARTIN. Yes.

Mr. QUIN. What do you figure the brokerage fees, added to the interest, would make the interest cost you?

Mr. MARTIN. We have not those figures anyway definitely, Mr. Quin. You understand that all those things depend upon the prevailing market conditions, and the conditions that prevailed a year or so ago are not the conditions that prevail now, and the conditions that prevail now may not be the conditions that will prevail six months from now.

Mr. QUIN. What did you have to pay for money in January of this year?

Mr. MARTIN. The securities were retailed to the public at a little over 6 per cent. We do not know what the conditions will be six months from now. We hope they will be better, but our plan, of course, is the same as that of all other public service companies, to go into the market and obtain money on the most favorable terms and the best terms that prevail at the time, and I believe that our company is in position to obtain funds on just as favorable a basis as any public utility in the country.

Mr. QUIN. Mr. Martin, the big packing plants paid 8 per cent, their statement shows.

Mr. MARTIN. Oh, undoubtedly there have been securities sold on an 8 per cent basis within the past 12 months, and even on higher rates, Mr. Quin, within two years, when very extravagant rates of interest were paid, but you will appreciate that long-term, good investments in securities of this kind appeal to the public. For instance, take the past year. In the past 12 months there were securities of light and power companies sold amounting to $472,500,000, of which $145,493,000 were issued and sold by hydroelectric companies, most of them within the past 60 or 90 days, and there is an established, good going market for high-grade securities based on hydroelectric properties; and furthermore, Mr. Quin, when you consider the demands that are going to arise from year to year, the natural and normal demands of the lighting and power industry of this country will require approximately $733,000,000 a year for a number of years to meet the public demand. A great deal of that will be devoted directly to the manufacture and distribution of hydroelectric energy. Part of it will be for other services relating to lighting and power. When you go into the question of financing public utilities of this class, you must remember that the Government's program of financing some part of the public utility situation in the South involves not alone that, but if the Government undertakes the financing of hydroelectric properties at all you are going to run into the policy of financing them generally, involving volumes of money here that we can not foresee by any sort of a guess, this great industry requiring, as it does, over $700,000,000 a year to meet public demands, and where will you come out if you do not meet those demands?

Mr. QUIN. You stated that you expected to develop through the completion of the Wilson Dam, with the aid of the steam plant, 240,000 horsepower; is that correct?

Mr. MARTIN. No; not through the use of the steam plant. Our suggestion, Mr. Quin, is simply that as this construction and development goes forward we would install 240,000 horsepower by the time the dam is completed and the power house ready for initial service.

Mr. QUIN. You mean that would all be water power?

Mr. MARTIN. Yes, sir; 240,000 horsepower would be the installation.

Mr. QUIN. There would be 240,000 horsepower installed, of which 100,000 horsepower would be primary power?

Mr. MARTIN. Yes, sir; and as the business grew in that territory, then the licensee or company would install further equipment until the complete installation in this power house is made; that is, assuming 600,000 horsepower as the complete installation, a company situated as ours, for instance, would install further units from year to year. We have a plant on the Coosa River, lock 12, where we have six units totaling 110,000 horsepower. We first installed three, and within another year or two we installed another, and then another, and then finally we reached the sixth unit, the sixth unit being installed about six years after the first three were installed, and that is the way this industry grows, and that is the way the installation is made to meet the demands as they arise.

Mr. QUIN. The question of the rate of interest and all overhead charges and costs would be bound to be taken into consideration by the public-utilities commission in the matter of rates, would they not?

Mr. MARTIN. Oh, yes; the question of rates, the question of service, and the question of securities issues are all under the control of the public-service commissions in the South. In our own State all those questions are under the control of the commission.

Mr. QUIN. If you have to pay a high interest rate, that comes out of the customers under the rate allowed by the public-utility commission?

Mr. MARTIN. Of course, the company is entitled to a fair return.

Mr. QUIN. And that is what the utility commission bases the rate on?

Mr. MARTIN. It bases the rates not necessarily on the cost of money, but they are based on the variety of elements that enter into that.

Mr. QUIN. And that is one of the elements, because a man is bound to be allowed a profit or he can not run.

Mr. MARTIN. Of course; and you must bear in mind that nowadays the very purpose of the public authorities in controlling security issues is to prevent an abnormal charge being made on the public through rates, and that is the situation now.

Mr. QUIN. You stated and showed by your map the territory that could be served by power there. That is also the main territory that uses commercial fertilizer, is it not, all those States around there—Alabama, Georgia, Mississippi, Arkansas, and the Carolinas?

Mr. MARTIN. Yes; that territory, of course, uses a great deal of commercial fertilizer.

Mr. QUIN. Then that place is located practically in the center of the real fertilizer community, is it not?

Mr. MARTIN. It is well located for that purpose.

Mr. QUIN. Do you not think that for the whole good, the question of cheap fertilizer being given to those communities amounts to a good deal more than the power consumed?

Mr. MARTIN. In the first place, Mr. Quin, we do not interfere with that question. According to the statements which have been made to this committee by Mr. Worthington and by others, 100,000 horsepower should be used in the cyanamid process in manufacturing nitrates at plant No. 2. We propose that the Government shall have that free. Now, when you get into the question of fertilizer, as to the advantage which comes from one or the other, we say that we are giving the Government a definite volume of power for that purpose. Now, when it comes to the balance of the power, whether it is used in industries locally, and a lot of it will be, or elsewhere, it is distributed by a concern engaged in public service. Your own State needs power, and needs it very much. You need only look at the industrial development in those States of the South which have great systems such as this and those which have not to see the relative advantages.

Mr. QUIN. We think we need fertilizer much more than we need that power.

Mr. MARTIN. Well, undoubtedly you do, and you should get them both.

Mr. FISHER. How many directors are there in the Alabama Power Co.?

Mr. MARTIN. There are 12 as I recall, Mr. Fisher.

Mr. FISHER. Could you give the ones who are American citizens and the ones who are aliens?

Mr. MARTIN. They are all American citizens but two. In Alabama there reside the following—shall I give the names?

Mr. FISHER. If you will, if you remember them.

Mr. MARTIN. I will try to remember them. These live in Alabama: Mr. Mitchell, Mr. Weatherley, Mr. Hobbie, Mr. Moody, Mr. Hassinger, Mr. Walmsley, Mr. Hood, and myself. These live in different parts of the North: Another Mr. Mitchell, Mr. Dahl, Mr. Swan, who is not related to the Mr. Swann who has testified here, and Mr. Grosbeck; and outside of this country, living in Montreal, Canada, there are Mr. McFarland and Mr. Henderson.

Mr. FISHER. Can you give us the percentage of the stock in the Alabama Power Co. that is held in this country by American citizens?

Mr. MARTIN. The stock of the power company and the stock of the holding company is held in this country something in excess of 40 per cent, consisting of the Alabama Power Co.'s preferred, and, of course, that votes along with the common, and the common stock of the holding company, which is largely held in this country, as I stated, those holdings amount to something in excess of 40 per cent, and the largest single holdings of the stock of the holding company are in this country, and the largest single holdings is by citizens of Alabama.

Mr. FISHER. Are you stating that from a careful examination of the stock books of the Alabama Power Co.?

Mr. MARTIN. Yes. I have not seen the stock books for some time, Mr. Fisher but I keep up with it, naturally, from contact with the secretary of the company.

Mr. FISHER. As I understand the history of the contract with the United States Government, you formed a tentative agreement a year before the final contract was signed; is that correct?

Mr. MARTIN. Yes. May I go back to your former question just a moment?

Mr. FISHER. Yes.

Mr. MARTIN. As I stated to Mr. Quin, taking our securities, both bonds and stocks, about 65 per cent of all our securities are held in America, and all the securities of our company which carry any interest charge at all or any dividend charge, practically all of them, are held in this country. We have never paid any dividend on the common stock, and all of our dividends and earnings have practically gone to American citizens. I am very sorry to say that because people abroad who invested in our securities have been disappointed, and disappointed because of the reorganization which had to take place in our company in 1914, due to the changing conditions brought about by the late war.

Mr. FISHER. As you understand, this nitrates proposition is one of national defense, and you can understand why this matter is of interest to Congress and to the country.

Mr. MARTIN. Yes.

Mr. FISHER. Now, referring again to the date of the tentative contract which you had with the Government and the final contract, what transpired through all that period of time to delay a contract on so large a job? You were spending millions of dollars for the Government each month, were you not?

Mr. MARTIN. No; not each month.

Mr. FISHER. Within a few months' time.

Mr. MARTIN. These expenditures, of course, ran over a period of 12 to 15 months. We did not spend the money. The Government had a disbursing officer there. It was spent directly. As you probably know, all the purchases were made for the account of the Government, on its approval, and the moneys were paid direct by the disbursing officer from funds which he had to his credit arranged in some way through the Treasury Department of the United States. We did not control any of the funds.

Mr. FISHER. Who were the officers in the Ordnance Department that you negotiated with in this contract?

Mr. MARTIN. I believe I stated to you that at different times we had negotiations with Col. Joyes, Col. Beames, and there was a Col. White, who had something to do with our contract, and Maj. Coombs. At one time, in its inception, the question was before the War Industries Board, Power Section, and Gen. Keller had a great deal to do with the whole subject of the location of power facilities; Gen. Charles Keller, of the United States Army. Then there was Capt. Raymond Hull Noble, who was the counsel for the Government in the beginning of the negotiations, and who died in the summer of 1918; and there was Lieut. Col. William Williams; and at another time Maj. Burns had some part in it; and Capt. Gaillard was another officer; and Maj. Runcie was another officer of the Government; and Maj. Gen. Williams, who is the Chief of Ordnance.

Mr. FISHER. Which one of those officers is the officer who had the final say as to the approval of the items of the contract?

Mr. MARTIN. Well, I am not able to say. In its beginning Col. Joyes initiated the program. It was approved, however, by the power section of the War Industries Board, and in carrying out the contract at some points the negotiations were taken up and concluded by Col. William Williams. Now, just who had the authority I can not say. I can only say who I discussed it with.

Mr. FISHER. Were you in Washington the day the fake armistice notice came out?

Mr. MARTIN. No, sir.

Mr. FISHER. Was the contract signed in Washington?

Mr. MARTIN. No, sir; it was signed in New York. I was present when the contract was signed.

Mr. FISHER. Was there anything about the fake news story that produced the signing of the contract?

Mr. MARTIN. No.

Mr. FISHER. Did that have anything to do with it?

Mr. MARTIN. Not a thing.

Mr. FISHER. You had expended millions of dollars for the Government over the period of a year with no contract, and news of the armistice came or of the end of the war, and the contract was signed. That was just a coincidence. Is that your interpretation of it?

Mr. MARTIN. Col. Williams asked us to meet in New York for the signing of the contract, and we met there in pursuance of his request.

Mr. FISHER. It was always understood, was it not, that this was a war contract?

Mr. MARTIN. Yes, sir.

Mr. FISHER. Would you kindly tell the committee just when you stopped work on this contract?

Mr. MARTIN. We did some work at our own expense some time in the spring of 1919. We stopped work in the spring of 1919. The Government's expenditures stopped very soon after the contract was made and we took it up and completed the work.

Mr. FISHER. Did the Government ever get any power from the extension to your plant that was erected?

Mr. MARTIN. No; it was this way, Mr. Fisher: The Government had the right to take power from this extension, or, rather, from our company, say, 30,000 kilowatts. The Government also had the right to suspend the taking of energy under the terms of the contract. If the Government took power under that contract, it meant a very large volume, and, of course, a very large use for power, with a minimum monthly charge of $30,000, because we had to provide a staff and coal and men to furnish that power. Now, there never was a minimum charge of $30,000 a month paid, because when the armistice came the use of power in large volume was unnecessary. So Col. Joyes or Maj. Burns, I have forgotten who it was now, gave us an order suspending the right to take energy under the contract and electing to take energy from our system as any user of power would. So our company supplied power to the Government, not under the contract but at rates prevailing for such service fixed by the public service commission of Alabama, and from that time on we have supplied the Government with power for the needs at Muscle Shoals, for construction needs around the Wilson Dam, for lighting and policing, and such operating as took place at the nitrate plant. Of course, before the Warrior extension was completed and during the period of the war, we supplied the Government with power in varying amounts from 10,000 kilowatts to 30,000 kilowatts for its uses, and that was from our system before the extension was completed.

Mr. FISHER. Was any work done down at Gorgas under this contract other than the completing of the extension of the powerhouse? Was there not some work done on a railroad after the armistice?

Mr. MARTIN. Part of that was done before and most of it afterwards. Our company expended in completing the railroad $105,000 and the Government expended $30,000. All the money we spent was entirely after the armistice.

Mr. FISHER. The war was over, and when did you begin to take steps to bring about an adjustment of your differences which the Government and a settlement? You had this enormous extension to your plant which was the property of the Government: when did you begin to take steps to bring about a settlement with the Government, or did you take any steps?

Mr. MARTIN. You mean——

Mr. FISHER (interposing). Under the contract, did you take any steps at some time after the armistice, or how soon after the armistice did you take steps to bring about a settlement?

Mr. MARTIN. The whole matter was adjusted within 90 days after the armistice, we taking over the completion of various work at our expense, and the Government's advances stopped.

Mr. FISHER. Has anything been done in the last year by the Government or by you toward bringing about a settlement?

Mr. MARTIN. You mean taking over the property?

Mr. FISHER. Yes.

Mr. MARTIN. We discussed the question several times, and we were preparing to start this arbitration last summer, and the Ford proposal came in, involving this property, and the Ordnance Department were unwilling to go any further until the Secretary of War disposed of that. We were in active negotiation looking to the arbitration and settlement of the whole matter last summer and last fall.

Mr. FISHER. Until the Ford offer was made last summer you took no further interest in Muscle Shoals, did you? You had no interest in the development of Muscle Shoals?

Mr. MARTIN. Yes; of course; our letter of May showed our interest.

Mr. FISHER. But not in the near future?

Mr. MARTIN. Yes; in the immediate future, because we had to have power to meet the public demands.

Mr. FISHER. Would you have made an offer for the Muscle Shoals project if Ford had not included in his offer the Gorgas power plant and the transmission line?

Mr. MARTIN. We have always felt, Mr. Fisher, that this Muscle Shoals development should be made in such a way as to interconnect with power systems of the southeast, and our letter of May showed exactly how we felt about it, and we stand on the terms of that letter.

Mr. FISHER. Who was the lawyer for the Alabama Power Co. in all the negotiations leading up to the signing of the contract? Did you represent them as their general counsel at that time?

Mr. MARTIN. I was general counsel, and the only other lawyer we had was Mr. Weathers, the gentleman right here [indicating].

Mr. WRIGHT. Mr. Martin, I understood you a day or two ago, in response to a question from Mr. Miller, to state that this 100,000 secondary horsepower mentioned in section 2 of your offer would be available to the Government or the Government's assignee for the purpose of the production of fertilizers at Muscle Shoals or munitions of war, and for making experiments in the production of fertilizer or for any other purposes for which the Government might want to use this power. Did I understand you correctly?

Mr. MARTIN. If I understand your question; yes. We proposed to furnish the 100,000 horsepower, as required, for the production of fertilizer and munitions of war and for research work.

Mr. WRIGHT. But if I understood your response to Mr. Miller, if the Government did not see fit to use it for that purpose, it would be available to the Government for any other use it might want to put it to?

Mr. MARTIN. Substantially so. I assume the Government, if it did not want to use it for these purposes, would want to sell it. I do not suppose the Government would want to engage in public service. That is the only thing I have in mind.

Mr. WRIGHT. Have you your offer before you?

Mr. MARTIN. Yes, sir.

Mr. WRIGHT. I call your attention to section 2. Let us read that carefully: "To furnish free to the Government, or anyone it may designate, from the hydropower plant 100,000 horsepower, as required, for the production of fertilizers and munitions of war and for research in connection therewith; and if, due to changes in the art, this use of such 100,000 horsepower is discontinued by the Government, the Alabama Power Co. to purchase and pay for same in accordance with a schedule to be set forth in the license, this power to be the second 100,000 horsepower at any time available from the normal flow of the river."

Of course, Mr. Martin, it is very proper we should understand what a proper construction of that section is, as it may be practically applied. That is a very clear statement, as I read it, and there is no ambiguity.

Mr. MARTIN. No, sir; there was none intended.

Mr. WRIGHT. And can that section mean anything except that this 100,000 secondary horsepower shall be available to the Government or to anyone it may designate for the sole purpose of the production of fertilizers or munitions of war and for making experiments or for research work in connection therewith, or if due to any changes in the art, the Government or its assignees do not so use that 100,000 secondary horsepower, can any other use be made of it than to sell it to you under the terms of that section?

Mr. MARTIN. What other use could there be, Mr. Wright?

Mr. WRIGHT. I am just asking you the question. I understood you to say the other day that the Government could use it for any purpose.

Mr. MARTIN. If you want to modify it and make it available——

Mr. WRIGHT. No; does not the section itself modify it? Does it not limit it by the very language of the section to its use for the production of munitions of war and fertilizers in the operation of these plants?

Mr. MARTIN. We did not have in mind any limitation, and if you want to expand the scope of those words, that is all right.

Mr. WRIGHT. I am not trying to expand its meaning. I am trying to suggest what it means as it is written here.

Mr. MARTIN. We were all dealing with a question of fertilizers and munitions of war.

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Mr. WRIGHT. I understand that; but I think it is material, Mr. Martin, in the light of what has developed here, that we should understand that; that is all.

Mr. MARTIN. Any expansion in meaning you want is entirely satisfactory to us. All of th s proposal doubtless will be the basis of some contract or license.

Mr. WRIGHT. You agree with me, then, that under the terms of this section that would be the proper construction?

Mr. MARTIN. Yes.

Mr. WRIGHT. So that it would not be available to the Government to light the camp at Anniston or Camp Benn ng?

Mr. MARTIN. I th nk it would, as drawn.

Mr. WRIGHT. You think so?

Mr. MARTIN. Yes. I did not have in mind that precise use, but I do not think it would be a very extreme construction, and certainly, so far as we are concerned, if you want to modify it in any way, it is entirely satisfactory to us.

Mr. WRIGHT. I notice you wind that section up with this language:

"This power to be the second 100,000 horsepower at any time available from the normal flow of the river."

Is there any particular significance about the words "from the normal flow of the river"? Does that mean that the Government gets the very first 100,000 secondary horsepower at this plant?

Mr. MARTIN. That is what we intended to express, Mr. Wright.

Mr. WRIGHT. You have said that that 100,000 second horsepower would be available for 82 per cent of the period, and that is based on the average taken for the past 30 years.

Mr. MARTIN. Yes; those records, Mr. Wright, you know, have been very carefully kept.

Mr. WRIGHT. Of course, you have to have some basis for that, and you have carefully compiled this from the records for the past 30 years.

Mr. MARTIN. And the United States Geological Survey has had its gauge readers on th s river for 30 or 40 years, and on the Chattahoochee River and the Alabama and the Coosa, and the records of those rivers are in splendid condition, and we have compiled our figures from those records.

Mr. WRIGHT. I understand that, and I do not challenge the statement at all, and I assume you are correct in saying that the average for the past 30 years would be 82 per cent.

Mr. MARTIN. Yes, sir.

Mr. WRIGHT. That is the best information available.

Mr. MARTIN. Based on daily stream flow on records taken for 30 years.

Mr. WRIGHT. There is no difference between us about that, but what I do want to ask you about is whether you have any records or statistics to show in this period of 30 years what the least production would have been.

Mr. MARTIN. Yes, sir; those records all show that.

Mr. WRIGHT. What is that? What is the least it would have produced in any one year, or the year when the flow was lowest?

Mr. MARTIN. You mean the 100,000 secondary horsepower?

Mr. WRIGHT. Yes, sir. So that you may understand me fully, as I understand, the average during the 30 years would have been about 10 months in the year?

Mr. MARTIN. Yes; something like that.

Mr. WRIGHT. Now, I want to know the year, if there was a year, during the 30 years when it was less than 10 months a year, and how much less.

Mr. MARTIN. If you will look at this map and follow me here, I can show you that.

Mr. WRIGHT. But I want to get the figures in the record. That is a beautiful map, but I doubt if they can get that in the record.

Mr. MARTIN. No; they probably can not. There are 6 years out of the 20 here when none of this power would be available for certain months of the year.

Mr. WRIGHT. What proportion of the year is that? That is what I want to get at.

Mr. MARTIN. For instance, in 1899 the river flow was such that there were two months.

Mr. WRIGHT. Two months when it was available?

Mr. MARTIN. When it was not available. In 1903, there were two months; in 1904, there were two months; and in 1913, there were three months. Nineteen hundred and thirteen is the longest continued interruption in the history of the river.

Mr. WRIGHT. So that during that year this power would have been available for nine months?

Mr. MARTIN. Yes. During 1914, one month, and if you will notice in some of these years the power is available for every month in the year. You can see how this chart will give you a better idea of the real value of this power and its availability——

Mr. WRIGHT. I will be very glad to examine the map, but I want to get these figures in the record. What three months do the records show that that power was not available?

Mr. MARTIN. In 1899 the months of October and November; September and October of 1903; October and November of 1904; and September, October, and November of 1913; and November of 1914. It is all in the same period of the year.

Mr. WRIGHT. Now, Mr. Martin, when you spoke about the average being 82 per cent, or, in round numbers, 10 months in the year, that does not necessarily mean that you would get that power for 10 consecutive months in the year, but it would vary, perhaps, each month, would it not? You would get a certain quantity one month, say, July, and probably a larger quantity in August or a less quantity in August, and it would not be uniform because then it would be primary.

Mr. MARTIN. For certain months of the year it would be uniform, of course. You can look at this map and see how it runs.

Mr. WRIGHT. In other words, to get that clear, if a plant was in operation that required a steady current of power 12 months in the year or say 10 months in the year, it would not get an equal amount of this secondary power each month.

Mr. MARTIN. What you would do would be just as one of the witnesses explained here; you would plan those operations of your plant which required the full 100,000 horsepower for those months in the year when you would get this power. The records of that district are such that that power will be available, according to any human calculation, for certain months in the year or certain parts of the year. Then the plant would be adjusted to manufacture to its highest capacity during those months, reducing it to meet the stream flow conditions at other months. That is exactly what has been explained so fully by Mr. Bower in his former testimony.

Mr. WRIGHT. I just wanted to explain that some one who operated that plant utilizing secondary horsepower could not figure they would run 10 months in the year with that horsepower because it would not mean that they would get an equal quantity of it during each of the 10 months.

Mr. MARTIN. They would not get an equal quantity of it during each of the 10 months, but you could adjust your operations to meet what, according to the history of the river, would be the result there.

Mr. WRIGHT. But if you wanted to run uniformly, of course you could not do that, because it would depend on the flow of the river as to how much you got each month.

Mr. MARTIN. Of course, during the fertilizer season, when the demand is the greatest, this record shows you that the power is available and always has been available.

Mr. WRIGHT. Now, Mr. Martin, I note from your offer that in case the Government should not make use of this 100,000 secondary horsepower it will sell it to your company at rates to be fixed in the license which may be granted you by the Water Power Commission, and that is a matter about which the commission would have some discretion, is it not?

Mr. MARTIN. Oh, yes.

Mr. WRIGHT. That power is vested in the commission and Congress would have nothing to do with that.

Mr. MARTIN. That depends on your legislation, of course.

Mr. WRIGHT. I mean as it stands now.

Mr. MARTIN. Having authority to deal with that question, I presume they would deal with it.

Mr. WRIGHT. But the matter of the price of that power would be a matter of negotiation between your company and the Federal Water Power Commission.

Mr. MARTIN. Yes, sir.

Mr. WRIGHT. There is also some discretion vested in the commission as to the time you shall commence the work—not to exceed two years, I believe it is.

Mr. MARTIN. Yes.

Mr. WRIGHT. And the commission might have the power to extend the time for an additional two years.

Mr. MARTIN. I will have to look at the law to get those exact terms.

Mr. WRIGHT. I think that is correct.

Mr. MARTIN. We must begin the construction within the time fixed in the license, not more than two years from the date herein, and if the commission wants to fix it in 30 days, we will begin with 30 days after the license is issued. That is a matter entirely in the hands of the commission. There is no difficulty in fixing that, and that matter and the period for completing the construction are matters entirely in the hands of the commission.

Mr. WRIGHT. Of course, under your offer the work might be delayed for four years if the commission granted you two years to begin work and then granted you an extension of two years more, which they would have authority to do under this Federal water power act.

Mr. MARTIN. Acting in the utmost good faith, as we are, Mr. Wright, there is no reason why there should be any such period of time.

Mr. WRIGHT. I am not inquiring about that. I am saying that that could happen.

Mr. MARTIN. That is possible to happen, but unless there is a catastrophe or a world emergency of some kind, there is no reason to suspect any such condition as that arising. If we had the license to-day, we could begin next week, so far as that goes.

Mr. WRIGHT. Mr. Martin, Mr. Hill, I believe, asked you about the current necessary for these Government posts at Anniston and Benning and several other points. As a matter of fact, there is very little current required, comparatively speaking, for those activities of the Government, is there not?

Mr. MARTIN. Now, I could not answer, Mr. Wright. I am not personally familiar with just what the requirements are.

Mr. WRIGHT. It is principally lighting, is it not?

Mr. MARTIN. Lighting and pumping and small motors of various kinds. There is a variety of uses always at those places.

Mr. WRIGHT. But, comparatively speaking, there would be a very limited quantity required.

Mr. MARTIN. Of course, it depends on the activities there and the number of men. There is an aviation camp at Montgomery, where there are machine shops that employ a number of men who are engaged in repair work, and I suppose that single shop will use as much power as a large camp where men are employed. Those things depend on the uses and the number of people.

Mr. WRIGHT. Mr. Martin, you were asked about the power in and around Camp Benning, near Columbus.

Mr. MARTIN. Yes.

Mr. WRIGHT. That is right on the Chattahoochee River.

Mr. MARTIN. Yes, sir; that is in your district, I believe.

Mr. WRIGHT. That is quite a river, is it not, Mr. Martin?

Mr. MARTIN. Yes; although I do not know very much about it.

Mr. WRIGHT. So far as power is concerned.

Mr. MARTIN. Yes.

Mr. WRIGHT. And the community there at Columbus speak of themselves as a place with the push and the power, do they not?

Mr. MARTIN. I think they do.

Mr. WRIGHT. And they have power there, have they not?

Mr. MARTIN. They have power developments there.

Mr. WRIGHT. Do you know how many dams there are near Columbus?

Mr. MARTIN. I do not know. I think there are two or three.

Mr. WRIGHT. Three, are there not?

Mr. MARTIN. Yes.

Mr. WRIGHT. Right near Columbus?

Mr. MARTIN. We have been for years trying to work out a plan of connecting our lines from Opelika to Columbus and from La Fayette to West Point with a view to supplementing our own situation down there and supplementing the Columbus power supply.

Mr. WRIGHT. Now, Mr. Martin, there is another power about 18 miles north of Columbus known as Goat Rock Dam, is there not?

Mr. MARTIN. Yes.

Mr. WRIGHT. That is owned by the Columbus Power Co.?

Mr. MARTIN. Yes; although I have never been there.

Mr. WRIGHT. That is quite an extensive plant, is it not?

Mr. MARTIN. Yes; I think so.

Mr. WRIGHT. They run to Columbus and north of Columbus?

Mr. MARTIN. Yes; they have a large plant of 50,000 or 60,000 horsepower.

Mr. WRIGHT. And then at Newnan, Ga., the Columbus Power Co. and the Georgia Railway & Electric Power Co. each connect, do they not?

Mr. MARTIN. Yes, sir; their lines connect there.

Mr. WRIGHT. Now, as a water-power man—I am speaking of you as a water-power man—the Columbus Power Co. does not really need the current of the Georgia Railway & Power Co., and the Georgia Railway & Power Co. does not really need the current of the Columbus Power Co. except in cases of breakdown or something like that. Is not that the reason they connect up?

Mr. MARTIN. Yes, Mr. Wright; but you will remember that those two rivers, the Chattahoochee and the Tugaloo are in different watersheds, and that very fact——

Mr. WRIGHT (interposing). I just wanted to know about those two companies.

Mr. MARTIN (continuing). And there is quite a fluctuation in the river flow of the Chattahoochee watershed and the Tugaloo watershed, and in the nature of things you are going to have water in one watershed when there is not water in the other, and the fact of being connected as they are makes it possible for them to use the water of the Chattahoochee to greater public advantage than if they did not have this connection. Inevitably that is the result. We find it so with our connection on the Coosa. We have a power on the Coosa, and so have the Georgia Railway & Power Co. on the Tugaloo. We carried their entire system for several weeks in the month of January. We had rainfall and they had none.

Mr. WRIGHT. I can see, Mr. Martin, why it would be very desirable to link these various systems together. I can understand that.

Mr. MARTIN. Yes.

Mr. WRIGHT. But the point I want to get back to is that they do not need any additional power in and around Columbus, Ga., now, do they?

Mr. MARTIN. I think if you will ask those gentlemen down there they will tell you they do.

Mr. WRIGHT. You think they do?

Mr. MARTIN. And if we could give them 20,000 horsepower, I think you would find they would be glad to take it.

Mr. WRIGHT. Do you get any power from them?

Mr. MARTIN. Not a bit; no.

Mr. WRIGHT. You do not get any from the Georgia Railway and Power Co.?

Mr. MARTIN. No.

Mr. WRIGHT. That is a wonderful, big system, is it not?

Mr. MARTIN. Yes, sir; and we carried all the load of that system with our big Warrior plant and our surplus that we had in our own system for nearly 60 days because they did not have the waterflow, and they did not have a reserve steam plant.

Mr. WRIGHT. Are you acquainted with numerous sites along the Chattahoochee River which could now be developed?

Mr. MARTIN. No; I am not.

Mr. WRIGHT. You are not familiar with the one at Franklin, Ga.?

Mr. MARTIN. I do not believe I am.

Mr. WRIGHT. That would produce 100,000 horsepower, would it not?

Mr. MARTIN. I really am not familiar with that, Mr. Wright.

Mr. WRIGHT. Does your company use the steam plant at nitrate plant No. 2.

Mr. MARTIN. Yes; we have leased it.

Mr. WRIGHT. I know you have it leased, but do you actually use any power from that plant?

Mr. MARTIN. We are not using it at the present time, but we have a force of men there, and it is in a condition to operate on very short notice.

Mr. WRIGHT. I think you leased that plant last November?

Mr. MARTIN. Yes, sir.

Mr. WRIGHT. But you have not used it up until now?

Mr. MARTIN. No; we took it over and it took us about 90 days to get the plant in readiness to operate. It was very carefully put away and we very carefully had to set the plant in motion again. It is now ready to operate and

undoubtedly will operate during the year to the capacity of the line from Warrior to this plant, which is 30,000 kilowatts.

Mr. STOLL. Mr. Martin, a good deal has been said about load factor, and I will have to confess my ignorance. What do you mean by load factor?

Mr. MARTIN. That is a term expressing use of power. It is the ratio of average use to the maximum use. For instance, there are 8,700 hours in a year; the volume of power used during those hours is integrated and divided by 8,760; this gives the average use. This average use is some percentage of the maximum use. This percentage is called load factor.

Mr. STOLL. The amount of current consumed, you mean?

Mr. MARTIN. It is the amount consumed.

Mr. STOLL. You and Mr. Fields had quite a discussion about the load factor and I was not able to follow that.

Mr. MARTIN. Will you allow me to ask Mr. Thurlow to express it as an engineer in terms that you can get in the record?

Mr. STOLL. I wish you would.

Mr. THURLOW. It is the ratio of the average consumption to the peak demand; that is, the ration of the average horsepower demand to the maximum instantaneous horsepower demand during any given period.

Mr. STOLL. When did your directors meet to make this offer?

Mr. MARTIN. February 15.

The CHAIRMAN. What year?

Mr. MARTIN. 1922.

The CHAIRMAN. About two or three weeks ago?

Mr. MARTIN. Yes.

Mr. STOLL. The minutes of your concern show the fact that you met and authorized this offer?

Mr. MARTIN. Yes, sir.

Mr. STOLL. Your offer, as I understand it, is that if the Government will give you Dam No. 2 as it stands you will complete it?

Mr. MARTIN. Yes.

Mr. STOLL. And that you will give them, we might term it, as a rental for it 100,000 secondary horsepower. What is that 100,000 secondary horsepower worth a year in dollars?

Mr. MARTIN. All I can do is just to express what I did this morning, Mr. Stoll. We had quite a discussion of that. Mr. Fields and I discussed that very fully this morning.

Mr. STOLL. I know you did, but I never did catch it. You had too much "factor" in it for me.

Mr. MARTIN. A year ago there were figures which were used in the hearings then of $7.50 per horsepower per year.

Mr. STOLL. Let me ask you this question: Can you express in dollars what that would be worth?

Mr. MARTIN. Per horsepower per year there were two figures used this morning, $7.53 and $7.80. Mr. Fields suggested $7.80 and a year ago the figure was used in the hearings of $7.53 per horsepower per year.

Mr. STOLL. Then it would be between $7 and $8 a year?

Mr. MARTIN. We will say that between $7 and $8 is a fair value for it used in this fertilizer industry, which, of course, would be from $700,000 to $800,000.

Mr. STOLL. Now, you offer to buy certain property. That is property you now claim to have a contract for the purchase of, I believe?

Mr. MARTIN. Part of it.

Mr. STOLL. Not all of it?

Mr. MARTIN. Part of the property covered by that contract, of course, is included.

Mr. STOLL. Do you not include it all?

Mr. MARTIN. All the property on which we have a contract.

Mr. STOLL. You offer to buy that?

Mr. MARTIN. We offer to buy that; yes.

Mr. STOLL. For $5,000,000?

Mr. MARTIN. Plus the other property mentioned in this offer.

Mr. STOLL. What other property?

Mr. MARTIN. The other steam plant.

Mr. STOLL. The one at nitrate plant No. 1?

Mr. MARTIN. The one at nitrate plant No. 2, at Sheffield.

Mr. STOLL. You want to buy that, too, outright?

Mr. MARTIN. Yes.

Mr. STOLL. Is that $5,000,000 less the value of the steam plant, what you term the fair value in your contract?

Mr. MARTIN. Mr. Stoll, that $5,000,000 plus the 100,000 horsepower together with our obligation to complete this construction is a very fair contract, is more than a fair contract to the Government.

Mr. STOLL. Oh, Mr. Martin, the Government is giving you $17,000,000, I believe it is, worth of work already done.

Mr. MARTIN. Yes, sir.

Mr. STOLL. Provided you go ahead and complete it. They give you the whole thing.

Mr. MARTIN. And we are giving the Government things of great value, too.

Mr. STOLL. Do you think that the Government should be under obligations to you after they give you this?

Mr. MARTIN. I am not saying the Government is under any obligations to us, but I am saying we are offering the Government a very fair contract.

Mr. STOLL. But that is not my question. My question was, do you consider the $5,000,000, less the value of the steam plant, which is a going concern, the fair value you placed upon this property in your contract?

Mr. MARTIN. You have got to take the situation as a whole. We have not expressed it in terms of fair value of plant, or in terms of fair value of water power. We have expressed it as a whole. We offer the Government 100,000 horsepower and $5,000,000 for these properties.

Mr. STOLL. I understand that, Mr. Martin; but when we had your contract up for consideration several members of the committee asked you what you meant by the fair value, and you would not say. Now, you make an offer in which you offer to buy this particular property over which you claim to hold an option, adding to that the steam plant.

Mr. MARTIN. We can not separate the two things.

Mr. STOLL. Now, I ask the direct question: Here is an offer you have made fixing a fair value for the steam plant, do you consider that to be the difference between the value of the steam plant and other property mentioned in your contract?

Mr. MARTIN. All I can say is this: In presenting this offer we balanced those situations and the values in one and the values in the other, and we have concluded that this is the basis on which we can make a reasonable proposal to the Government. That is the best answer I can make to you, Mr. Stoll.

Mr. STOLL. So you still decline to give an expression of that fair value?

Mr. MARTIN. I do not decline; I just tell you the basis on which we proceeded.

Mr. STOLL. But you do not do it. Now, referring to this map you have here showing this radius of 400 miles, what States are included in that radius?

Mr. MARTIN. Alabama, part of Georgia, part of Tennessee, part of Arkansas, part of Louisiana, and part of Florida.

Mr. STOLL. Does it go into the Carolinas?

Mr. MARTIN. I think it does. I think it does get to South Carolina.

Mr. STOLL. And part of North Carolina?

Mr. MARTIN. No; of course, it depends upon the situation.

Mr. STOLL. That is sufficiently definite. Have you listed the water powers in that territory?

Mr. MARTIN. No.

Mr. STOLL. You do not know the number of waters powers in that territory?

Mr. MARTIN. No; I can only give you the United States Geological Survey's recent report on it. If you would like to have that I can put that in the record.

Mr. STOLL. No; that is all right. In that territory, how many water powers do you own?

Mr. MARTIN. We are only interested in powers in Alabama, Mr. Stoll.

Mr. STOLL. You have no options for any power outside of Alabama?

Mr. MARTIN. Not at all.

Mr. STOLL. How many do you own in Alabama?

Mr. MARTIN. We have two developed and a third in process of development, and there are several sites that sooner or later we hope we can develop in Alabama, depending upon the action of the Federal Power Commission. We have no sites of any consequence except those that may be developed under license of the Federal Power Commission.

Mr. STOLL. With those you own, if you got control of Muscle Shoals, you would have pretty much of a monpoly of the water power in that territory, would you not?

Mr. MARTIN. No; there are many water powers, of course, and Mr. Wright has referred to some of them.

Mr. STOLL. I know that, but I said that you would practically have a monopoly.

Mr. MARTIN. No; there are a great many water powers in Alabama in which we have no interest. Some of the most important water powers on the rivers there we have no interest in at all.

Mr. STOLL. I understand that, but I asked if you would have a practical monopoly.

Mr. MARTIN. We would have several large water powers, of course.

Mr. STOLL. But you do not think it would be a monopoly?

Mr. MARTIN. I do not think it would be a monopoly in the sense you are speaking of, and I just want to say this: You are familiar with the Federal water power act?

Mr. STOLL. Somewhat, although I am not an expert on it by a good deal.

Mr. MARTIN. I want to direct your attention to one provision of the Federal water power act, section 7, which contains this provision with reference to the power commission:

"Sec. 7. That in issuing preliminary permits hereunder or licenses where no preliminary permit has been issued, and in issuing licenses to new licensees under section 15 hereof, the commission shall give preference to applications therefor by States and municipalities, provided the plans for the same are deemed by the commission equally well adapted, or shall within a reasonable time to be fixed by the commission be made equally well adapted, to conserve and utilize in the public interest the navigation and water resources of the region; and as between other applicants, the commission may give preference to the applicant the plans of which it finds and determines are best adapted to develop, conserve, and utilize in the public interest the navigation and water resources of the region."

Now, my point in that connection is that the whole theory of the Federal water-power act is to develop to the maximum use all water-power resources with the idea of combining in one operation water powers in different watersheds, interconnecting them so that the greatest possible use can be made of the waters in different watersheds. It is the entire region, which, viewed from the standpoint of public interest, is involved.

Mr. STOLL. Oh, yes; but that could be done without one company owning practically the greater portion of the water power in a given territory.

Mr. MARTIN. And the engineers of the United States, who have examined this most closely, have concluded that the greatest possible advantage that could result to the public in this territory would be the development of this Muscle Shoals property and its interconnection with our system, with the Tennessee system, and with other systems in Tennessee and Georgia, and other Southern States. In no other way can you realize the greatest advantage from this development. As I explained to Mr. Wright, it is a question of diversity of stream flow, diversity of use between different sections of the South, and the time ought to come when all the water that flows in the Tennessee River will generate power up to the 600,000 horsepower every day in the year and pass over these lines to points of use. You can not do that throughout the year unless powers are interconnected in a great big system; otherwise, you lose a great part of the value.

Mr. STOLL. But that could be done without the Alabama Power Co. owning Muscle Shoals, could it not?

Mr. MARTIN. It can be done, provided the power is interconnected.

Mr. STOLL. I know, and I say it can be interconnected by other companies owning it.

Mr. MARTIN. Yes; by any one who develops it with that theory, but I have not seen any program here which indicates that any one is looking to that use, and, furthermore, there is a program pending, the very purpose of which is to consolidate this entire water-power situation into one hand, not for public use but for private use, and I will ask you the question, if that does not create a real monopoly, a monopoly where there is no regulation as to rates, as to service, as to security issues, or as to anything else.

Mr. STOLL. It does not do that because he is only getting one water power, and you have a great deal of other water powers.

Mr. MARTIN. You spoke of the question of monopoly. There is a monopoly of the greatest water-power situation in the South.

Mr. STOLL. An individual water power.

Mr. MARTIN. These two water powers, without any public regulation of any sort and made not upon the basis of interconnecting it and getting the greatest use out of it.

Mr. STOLL. Would you not have a bigger monopoly if you owned what you now owned and you owned Muscle Shoals in addition than Mr. Ford would have if he merely owned Muscle Shoals? You would have a bigger monopoly then, would you not?

Mr. MARTIN. No.

Mr. STOLL. With what you have now and with Muscle Shoals in addition?

Mr. MARTIN. Of course it would be a greater system, but it would be interconnected with other systems with a view to getting the greatest value out of it for the public. There is just a limited profit or return to those who put their money in this. It goes to the public to serve industries and individuals in their homes and in their industries in this great section.

Mr. STOLL. Mr. Martin, I think I asked you somewhat this same question before: If the Alabama Power Co. is so very, very anxious to serve the people down there, why is it that so many people in Alabama are so hostile to them? Why is it that the boards of trade and those who represent Alabama in Congress and everyone seems so much interested in the Alabama Power Co. not getting this project? If you are such a concern that your sole desire is to serve the people, why would they not be for you?

Mr. MARTIN. I agree that there are a good many people who at the moment take another view of this situation.

Mr. STOLL. Yes, sir.

Mr. MARTIN. But there are also thousands of people who look upon it just exactly as I am stating it to you—thousands of them—and that situation you are going to see expressed in Alabama first and last. You will see it expressed now by individuals, by newspapers, and by many members of the public at large.

Mr. STOLL. You heard the statement of the governor of Tennessee made before this committee, did you not?

Mr. MARTIN. No; I did not. I heard of it.

Mr. GARRETT. Mr. Martin, when did your board of directors meet and change their minds and decide they wanted to take over this Muscle Shoals proposition?

Mr. MARTIN. They did not change their minds at all about anything that is here expressed, Mr. Garrett?

Mr. GARRETT. Did you not write a letter to the Secretary of War, or rather your company, some time ago, saying you were not interested in the project at Muscle Shoals?

Mr. MARTIN. No, sir.

Mr. GARRETT. I mean a letter to the Chief of Engineers?

Mr. MARTIN. No, sir. On the contrary, we wrote him and told him we were interested and were prepared to go ahead and cooperate in its development along commercial lines.

Mr. GARRETT. But you made no proposition to do so definitely.

Mr. MARTIN. If the Congress was concerned in its development and use in public service, we told the Chief of Engineers we would be prepared to submit a plan.

Mr. GARRETT. What guaranty is there in your proposition, Mr. Martin, that your company will fulfill its contract and the offer it has made here?

Mr. MARTIN. What guaranty is there?

Mr. GARRETT. Yes.

Mr. MARTIN. In the first place, we have property and assets engaged in the public service to-day which are substantial. We have explained to the committee that there is a great demand for the further power in the southeastern section, and there undoubtedly will be a market for a sufficient volume of this power before the dam can be completed to justify its development.

Mr. GARRETT. I understand that, but suppose the Government accepts your proposal and enters into an agreement such as you have outlined here in your eight propositions, and you take out your license under the water-power act referred to, and then you do not do anything, what recourse has the Government of the United States?

Mr. MARTIN. To take the property back.

Mr. GARRETT. Yes; they can take the property back. We can always do that. Then how much better off are we then than we are now?

Mr. MARTIN. Well, you will not be any worse off, will you?

Mr. GARRETT. We may not be any worse off, but we have not gotten anywhere. Is that the purpose of your offer here, that you are playing with the Government for time?

Mr. MARTIN. No, sir; we are not playing with the Government for time.

Mr. GARRETT. What guaranty do you offer.

Mr. MARTIN (continuing). And if you want us to give a bond to-day of $5,000,000 or $10,0000,000, we will be glad to do it. We are not playing with the Government.

Mr. GARRETT. But you do not say that in your proposal.

Mr. MARTIN. No, sir; because the law under which we propose to act carries with it the right of the Federal Power Commission to exact guaranties as to the financial responsibility of the proposed licensee, and you will notice that not only in the act, but the Secretary of War refers to it and says: "It is in the province of the Federal Power Commission to require such assurances and guaranties as may be necessary as to the financial ability of the licensee to complete its undertaking." We will comply with any request or demand made by the Federal Power Commission as to our financial ability to complete this undertaking.

Mr. GARRETT. That is very commendable, and what I want to know is this: This proposition of Mr. Ford's has been pending since the 8th of July, 1921, and after the hearings had been going on here for a week on his proposition, which was the only proposition that had ever come before Congress, you come forward now and show great anxiety to get this property, and you are willing to do anything the Government wants you to do in order to get hold of this plant. Why did you not do something before that?

Mr. MARTIN. Now, let us get the record straight. I think this proposal is dated some time in January.

Mr. GARRETT. No; Mr. Ford's first proposal is dated July 8.

Mr. MARTIN. Yes; but his last proposal is dated in January.

Mr. GARRETT. Yes; that was his first proposal, but I am referring to the last proposition he has submitted.

Mr. MARTIN. The one that is pending before the Congress is dated in January, as I recollect.

The CHAIRMAN. January 25, 1922.

Mr. MARTIN. Yes. We submitted our ideas on the subject in a letter to the Chief of Engineers in May. We again took it up with the Chief of Engineers by letter dated in July.

Mr. GARRETT. Now, let us keep the record straight as we go along. In those letters that you refer to did you make any definite proposition to the Government for the taking over of Muscle Shoals and carrying out the purposes for which the original project was started?

Mr. MARTIN. We stated in those letters that if the Government was prepared to consider a plan by which a part of the power would be devoted to public service, we were prepared to deal with it. As you know, of course——

The CHAIRMAN. Pardon me, in what year?

Mr. MARTIN. In the year 1921, and those letters point out the inhibition against proceeding now, that clause in section 124 of the national defense act, and hence there was not authority or power in the Government officers to deal with it at the time.

Mr. GARRETT. I did not catch that.

Mr. MARTIN. There was, as of course you know, the provision in section 124 of the national defense act, which provided that the plants or plant should be constructed and operated solely by the Government, and, of course, that made it impossible for us or anyone to make any arrangement or agreement.

Mr. GARRETT. Now, what I want to do is to get right down to the bottom of your proposition here, so far as the manufacture of fertilizer is concerned, to supply the agricultural interests of the country, and so far as the manufacture of nitrate of ammonia is concerned for ammunition purposes. You do not propose to have anything to do with that except to turn over to the Government 100,000 secondary horsepower, and the Government is to do that, if anybody does it, or name somebody to do it.

Mr. MARTIN. That is correct.

Mr. GARRETT. That is your position. So that under your proposition, so far as maintaining the nitrate plant No. 2 for munition purposes at all times for the use of the Government and keeping a force there and everything of that sort is concerned, and so far as making any fertilizer for agricultural purposes is concerned, you are not interested in that. You are going to leave that to the Government, if it can find somebody that will do that and your proposition

when stripped of everything else, including the 100,000 secondary horsepower, is a water right that you get for 50 years and nothing else.

Mr. MARTIN. We propose to give the Government the 100,000 horsepower and $5,000,000 and the Government retains its nitrate plant.

Mr. GARRETT. The Government already has that.

Mr. MARTIN. And you have enough money out of this deal which, at 4 per cent, will maintain your nitrate plant in a state of efficiency.

Mr. GARRETT. Now, when you have done that and wound it all up, you have got the extension of your plant that the Government paid for with its own money——

Mr. MARTIN (interposing). And which we pay for.

Mr. GARRETT. I say you are going to pay for that which the Government has already paid for, but you will have that and you will have dam No. 2, and that will be yours absolutely.

Mr. MARTIN. No: I do not accept that.

Mr. GARRETT. I mean subject to the right of the Government to recapture——

Mr. MARTIN. Subject to the right of the Government at the end of 50 years by paying the net investment and not any added value by reason of any increase in value in the interim, but simply the net investment in the project.

Mr. GARRETT. But you have that for 50 years.

Mr. MARTIN. Yes.

Mr. GARRETT. Absolutely?

Mr. MARTIN. Yes, sir.

Mr. GARRETT. And both the steam plants, and all you have paid the Government will be $5,000,000?

Mr. MARTIN. Plus the 100,000 annual horsepower.

Mr. GARRETT. Plus the 100,000 secondary horsepower.

Mr. MARTIN. Yes. In addition to that we pay the Government another very substantial item in that we relieve the Government of the obligation to maintain the dam and gates.

Mr. GARRETT. I understand that.

Mr. MARTIN. Yes.

Mr. GARRETT. But that is the only thing except maintaining the dam and gates and giving the Government the right to go through them for 50 years, and that is all the Government really has left under your proposition after you pay the $5,000,000.

Mr. MARTIN. And we relieve the Government of the obligation of putting up from $50,000,000 to $80,000,000 more money in the project.

Mr. GARRETT. But you are putting that up with the idea of making a whole lot more out of it. I am speaking now from the Government's viewpoint, and you take out for fixing up the locks and dam. You deduct out of that total the amount for fixing those locks and dams; you deduct that from the $5,000,000, do you not?

Mr. MARTIN. Of course, we can not make a lot of money out of it, because we are subject to the regulation of rates, and under the terms of the Federal water power act there is a provision limiting the terms and providing that if any earnings are made over and above that rate of return they are amortized to the United States Treasury.

Mr. GARRETT. What rate of return are you allowed under the Federal water power act on your investment?

Mr. MARTIN. The rate of return is fixed by the Alabama Public Service Commission.

Mr. GARRETT. That is another one of those "how old is Ann" propositions. What interest on your capital investiment are you allowed to make?

Mr. MARTIN. It is not fixed that way.

Mr. GARRETT. Let us see if we can get at it this way. This is an awful big proposition you have submitted to the Government, and evidently your experts have it all figured out where your company would come out in the end.

Mr. MARTIN. We know it is a big proposition, Mr. Garrett, and a big responsibility; we appreciate that.

Mr. GARRETT. What do you figure your company is to make out of this in 50 years, after you have done everything you propose to do?

Mr. MARTIN. We did not figure it that way, Mr. Garrett.

Mr. GARRETT. You do not know whether it is a good proposition or a bad proposition?

Mr. MARTIN. We figured that we can sell power to the public at a rate depending upon what it will cost us to maintain the project and what money will cost us.

Mr. GARRETT. The conclusion of your company is that the proposition you make to the Government, if you can get hold of Muscle Shoals for 50 years, in connection with your other holdings which you have in that section of the country, which will almost if not quite give you a monopoly of power in all of those circles you have on that map—you figure you can dispose of so much of it so that as a business proposition it will be a tremendously good thing for you?

Mr. MARTIN. If we were in a manufacturing business I would like to have it without regulation, because we really could make some money out of it.

Mr. GARRETT. The regulations allow you to make some.

Mr. MARTIN. But not much.

Mr. GARRETT. You have made a whole lot of it?

Mr. MARTIN. No; we have made enough money out of it to pay the fixed charges on our obligations, with a modest surplus.

Mr. GARRETT. Have you your financial arrangements all made to handle this proposition?

Mr. MARTIN. Substantially; we have an understanding with our bankers, and we think we will be able to find the necessary money.

Mr. GARRETT. You think you have an understanding. You do not guess at those things. You know you have, do you not?

Mr. MARTIN. We have an understanding.

Mr. GARRETT. What bankers have told you they would finance this proposition?

Mr. MARTIN. Not banks; they are concerns whose business it is to do this very kind of work—investment bankers. Harris, Forbes & Co. and Coffin & Burr are the two firms. They make a business of finding money for high-grade public service institutions such as ours.

Mr. GARRETT. Have they told you they thought they could find it, or that they could find it?

Mr. MARTIN. That is our agreement with them.

Mr. GARRETT. You will have to bond those concerns?

Mr. MARTIN. Certainly.

Mr. GARRETT. And sell those securities?

Mr. MARTIN. Yes.

Mr. GARRETT. You do not know whether you will have to sell them at home or abroad, do they know?

Mr. MARTIN. No, sir; but I think they will sell some in your State and some in mine, and sell some throughout this Nation.

Mr. MILLER. Mr. Martin, you are acquainted, of course, with the actual condition now of the Warrior extension.

Mr. MARTIN. Yes, sir; I think so.

Mr. MILLER. You are acquainted with it perhaps as well as any living man, as to its present value, its position, its preservation, and perhaps you are the best acquainted man as to its value as a going concern, and as a part of your organization. Your company is the lessee of it now?

Mr. MARTIN. In a technical sense we are not the lessee, we are in possession of it, under the terms of the contract, and operate it under that contract.

Mr. MILLER. Under the contract of December 1, 1917?

Mr. MARTIN. Yes, sir; that contract requires us to maintain and operate it as a part of our system.

Mr. MILLER. How much rental do you pay?

Mr. MARTIN. We pay a mill and a half a killowatt hour produced.

Mr. MILLER. What does that amount to in a year.

Mr. MARTIN. It depends upon the production.

Mr. MILLER. What has it amounted to?

Mr. MARTIN. Last year it was something in excess of $75,000. This year it will probably be twice that amount.

Mr. MILLER. Last year you paid something on a basis of 1½ per cent on the construction cost, amounting to $4,800,000. One and one-half per cent of that would be approximately $74,800, so that you paid approximately 1½ per cent.

Mr. MARTIN. Yes. And we have also maintained it. That is based on the investment in the plant and substations. The Government takes power from us now at the station and hence carries the investment in the line.

Mr. MILLER. You are also acquainted with the power plant at nitrate plant No. 2.

Mr. MARTIN. I do not know very much about that.

Mr. MILLER. But your men do.

Mr. MARTIN. Our people do, of course.

Mr. MILLER. Are you the lessee of that?

Mr. MARTIN. Yes.

Mr. MILLER. What are you paying for that, about how much?

Mr. MARTIN. Ten thousand dollars a month plus the energy charge for the energy generated.

Mr. MILLER. It is very clear to observe from your offer that you have picked out such units of the Government property in and about Muscle Shoals as will fit in with your business as a manufacturer of power.

Mr. MARTIN. Yes, sir.

Mr. MILLER. And have rejected those which are not and could not be made a part of your system.

Mr. MARTIN. Supplying the Government in lieu of those units——

Mr. MILLER (interposing). I am not talking about that. We will get back to that in a little bit. So this is a good-sized bill—$5,000,000—you are going to pay for those units and also the transmission lines from Warrior to Muscle Shoals. By the way, my curiosity has been aroused over that contract of December 1, 1917. Why were you so particular for the Alabama Power Co. to own that right of way?

Mr. MARTIN. I do not know that I was particular about it. There was an officer advising the Government in the beginning that it did not have the power at that time to purchase land.

Mr. MILLER. Who in the world gave such comforting information that the United States Government had no right to own lands?

Mr. MARTIN. Later on there was a statute passed under which the Government could acquire land for its various military and public purposes.

Mr. MILLER. Just on that point—and I do not mean to get away from the point I was asking about, referring to your contract of December 1, 1917, you provided in that contract that in building the Warrior extension, the Warrior substation you acted as the agent of the Government?

Mr. MARTIN. Yes.

Mr. MILLER. And considering the building of the transmission as part of the Warrior substation project, in order to get the benefit out of that, I notice this very significant language is there, in artcle 3 of your contract of December 1, 1917: "The contractor shall, subject to the approval of the contracting officer, at the sole expense of the contractor." That is the only time that expression has been used in your contract of December 1, 1917, from beginning to end. I have wondered why you were so careful to get title to that right of way in the Alabama Power Co. Why not let the Government have the right of way?

Mr. MARTIN. I think it imposed a burden upon us.

Mr. MILLER. That is not for us to say. I am asking you as a lawyer, who drew this agreement, or was interested in it, or as president of the power company, or as one of the gentlemen who signed the agreement, why you did that?

Mr. MARTIN. I expect you will find those words were inserted, and that language was inserted by the Government officer himself.

Mr. MILLER. You want to buy, for the language is at your sole consent, the right of way, but you were to build the transmission line as the agent of the United States Government. That is right, is it not?

Mr. MARTIN. Yes.

Mr. MILLER. That is compatible with what I asked you several days ago as to the interlocking and lockstitching this thing altogether, is it not? Suppose the transmission line, both the right of way and the title to the power line, belonged to the United States.

Mr. MARTIN. We had 30 miles of it, and had lines on it.

Mr. MILLER. That went as far as Jasper, and from Jasper on it is 88 miles.

Mr. MARTIN. Sixty-eight miles. You have to weigh the question of time. Having 20 miles of the way cleared, you could begin to build the transmission line the next day, but when you have to buy a clear title through an undeveloped district it is a very different problem. This transmission line, or the construction of the transmission line, was begun within a week after the Government asked us to undertake it. There was 20 miles clear. That was worth a great deal in the emergency; it enabled us to get power to Sheffield at a very much earlier date than otherwise.

Mr. MILLER. That is not answering my question. You could have bought the right of way as an agent of the United States from Jasper to Muscle Shoals as cheaply as you could have bought it for yourselves.

Mr. MARTIN. You mean from Jasper to Muscle Shoals?

Mr. MILLER. Yes; from Jasper to Muscle Shoals.

Mr. MARTIN. Of course, we could have.

Mr. MILLER. As cheaply as agents of the United States Government, as you could have bought it yourselves?

Mr. MARTIN. Just as cheaply. But we were asked to buy it by the officers of the Government themselves, or by one of the officers.

Mr. MILLER. Who was that gentleman who gave you that advice?

Mr. MARTIN. That was Maj. Runcie.

Mr. MILLER. What is his first name?

Mr. MARTIN. I have forgotten his name now.

Mr. MILLER. Was he a Regular Army officer or an emergency gentleman?

Mr. MARTIN. He was an officer of the Government at that time. I do not think he was in the service.

Mr. MILLER. He was not in the service?

Mr. MARTIN. He was a civilian adviser in the department at that time.

Mr. WEATHERS. May I say, Mr. Miller, he was a retired Army officer who had been engaged in the practice of law for many years?

Mr. MILLER. You did not have to go to a lawyer to get advice on a question like that?

Mr. WEATHERS. The Government officials naturally brought their law talent into this situation from the very start. In the initiation of the negotiations Maj. Runcie was the lawyer in charge of the interests of the Government. Maj. Runcie had been a Regular Army officer and had retired and practiced law for many years. When the war began he evidently returned to the service and was stationed in Washington in charge of this particular negotiation at the start.

Mr. MILLER. I wonder where he can be found now.

Mr. WEATHERS. I heard yesterday that he is now librarian at West Point.

Mr. MILLER. He is the gentleman who advised you that it was quite unnecessary for the Government of the United States to buy the right of way?

Mr. WEATHERS. He was the gentleman who raised the question as to whether at that time there was any legal authority for the United States to acquire this real estate upon which to build this plant. I would not say that he definitely advised that it could not.

Mr. MILLER. I am wondering, if there was ever such a limitation, how we acquired any land to build these nitrate plants on or do anything.

Mr. WEATHERS. This was in November, 1917?

Mr. MILLER. Yes.

Mr. WEATHERS. We had been in the war only a little while.

Mr. MILLER. We had been in the war for several months, since April, 1917.

Mr. WEATHERS. Most of the legislation came after that, I think.

Mr. MILLER. But such a thing is perfectly consistent with every other interlocking proposition connected with the interlocking of the United States property with the property of the Alabama Power Co.?

Mr. WEATHERS. Perfectly consistent.

Mr. MILLER. And fits in very nicely with that situation.

Mr. WEATHERS. That is right.

Mr. MILLER. If anyone has that purpose in view?

Mr. WEATHERS. That is right.

Mr. MILLER. Let us go back to the other proposition. Let me read, if you please, Mr. Martin, paragraph 3 of your offer. It says, "To purchase the Government's interest in the Warrion extension of the steam plant of Alabama Power Co. and facilities." What particular facilities have you reference to in the use of the Warrior facilities in that connection?

Mr. MARTIN. There is a substation there, and then the Government has an interest in the railroad extension.

Mr. MILLER. You mean the Drifton Railroad?

Mr. MARTIN. Yes.

Mr. MILLER. What becomes of your 25-year easement you have on that? Under the contract of December 1, 1917, you have a 25-year easement on that, have you not?

Mr. MARTIN. I really do not remember about that.

Mr. MILLER. You know your own contract, do you not?

Mr. MARTIN. I do not recall that particular question.

Mr. MARTIN. It is in here. I am getting back to the significance of the word "facilities," following this Warrior extension and steam plant proposition. You say that includes the Drifton Railroad?

Mr. MARTIN. That is the only thing I recall.

Mr. MILLER. What connection has that Drifton Railroad with the general scheme down there? It runs out to what property?

Mr. MARTIN. It runs from this plant to what was previously the end of the Southern Railroad line.

Mr. MILLER. It furnishes a railroad connection into your Warrior steam plant?

Mr. MARTIN. Yes; the Southern Railroad had a line running out from its main line to a mining district, and this was an extension of one of those branch lines to this plant.

Mr. MILLER. That would carry the Drifton Railroad?

Mr. MARTIN. Whatever that interest is.

Mr. MILLER. Let us see how much we put into the Drifton Railroad. According to the report of the Secretary of War it was $50,421. There has been more money than that which has gone into railroad, has there not?

Mr. MARTIN. We put $105,000 into it.

Mr. MILLER. Let us take the next part of this paragraph, "the Warrior and Sheffield substations"; we know what they are. Then there is the "transmission line from Warrior to Sheffield." That is the same transmission line concerning which it was considered illegal for the Government to go in and acquire it, so you took it. Then there is the steam plant at nitrate plant No. 2. How much land goes with that? Was it merely the land on which the plant stands, or is there any considerable acreage there?

Mr. MARTIN. You would have to look at the map to see. It was just enough acreage to maintain the plant, and then there is the substation and some housing facilities.

Mr. MILLER. It has some rather extensive dumping facilities, coal bunkers, and things of that kind, some of which are built of concrete and very valuable. All of that stuff goes with it?

Mr. MARTIN. No; just the things necessary to make the plant an operating plant.

Mr. MILLER. You can see how a dispute could arise between the Government and yourselves in determining what you shall get.

Mr. MARTIN. We will assume that when the time comes to make arrangements of this kind there will be a definite marking of the things included and those not included in this arrangement. That is a matter very easily determined.

Mr. MILLER. Then you say, "together with the necessary rights of way, lands, and housing facilities." What are the housing facilities?

Mr. MARTIN. You have to have a staff at a plant like this. Those are for operatives. There are a number of houses around this plant built for the men who will operate the plant.

Mr. MILLER. On whose property do those houses stand?

Mr. MARTIN. The United States Government's.

Mr. MILLER. The property of the United States Government? How could we acquire property on which to build houses if we could not acquire property on which to build a transmission line?

Mr. WEATHERS. That was six months later.

Mr. MILLER. Did this same gentleman advise you that the United States could acquire property on which to build houses but could not acquire property on which to build transmission lines? Is that what we are to understand?

Mr. MARTIN. All I know is what happened in connection with the Warrior situation.

Mr. MILLER. Was this same gentleman, Mr. Runcie, down there when the houses were built; were they built before or after the transmission line was acquired?

Mr. MARTIN. I do not remember that.

Mr. MILLER. Then the housing facilities were on the land of the United States. I did not know we owned any land around the Warrior station. Are these housing facilities there or at Muscle Shoals?

Mr. MARTIN. Both.

Mr. MILLER. Did we buy some land down there around the Warrior steam plant to build houses?

Mr. MARTIN. No. Those were some temporary houses on land of ours covered or leased from the power company in this contract.

Mr. MILLER. No houses were built on the land of the Alabama Power Co., were they?

Mr. MARTIN. Yes; some housing facilities for the operatives.

Mr. MILLER. Are those housing facilities that were passed by title to you?

Mr. MARTIN. You would have to look at the map to see.

Mr. MILLER. Would they take the land with them?

Mr. MARTIN. I suppose they would—you mean at nitrate plant No. 2 or at the Warrior plant?

Mr. MILLER. At the Warrior steam plant.

Mr. MARTIN. The Government does not own the land.

Mr. MILLER. It owns no land there; that is what I was getting at a little bit ago. But the houses were built or constructed by the United States Government.

Mr. MARTIN. This investment is included in the $4,900,000.

Mr. MILLER. Then your contract says "and to pay therefor in five equal installments the sum of $5,000,000, less an amount to be agreed on to cover the cost of locks and navigation structures at Wilson Dam." What is your information as to what deduction that will be?

Mr. MARTIN. Two million five hundred thousand dollars.

Mr. MILLER. Then that leaves $2,500,000 for you to pay?

Mr. MARTIN. Yes, that is right; to pay the Government.

Mr. MILLER. Then you are getting for $2,500,000 the Warrior steam plant extension and substation, the transmission line, the substation at Muscle Shoals, and the steam plant at Muscle Shoals, and the Drifton Railroad?

Mr. MARTIN. No; we are getting them for $5,000,000, plus 100,000 horsepower.

Mr. MILLER. I am not talking about horsepower; I am talking about the money transaction.

Mr. MARTIN. You can not separate them.

Mr. MILLER. Yes; we can separate those all right; we will separate them.

Mr. MARTIN. You can not separate them as a business proposition.

Mr. MILLER. You are getting them for a money consideration of $2,500,000.

Mr. MARTIN. If the Government wants to accept our proposition as a whole, that is part of it.

Mr. MILLER. Now, you get the steam plant in which we put $4,987,000 at the Warrior plant, and approximately $12,000,000 at nitrate plant No. 2; is that not about right?

Mr. MARTIN. Whatever the record shows.

Mr. MILLER. Then it would amount to approximately $17,000,000 worth of machinery, at war-time prices, of course, of electric power producing machinery?

Mr. MARTIN. No; you understand, Mr. Miller, that the dam is only partially completed.

Mr. MILLER. I am not talking about the dam; I did not mention the word "dam." I say you are getting the $12,000,000 we put in at nitrate plant No. 2, the steam plant, and $5,000,000 in the Warrior steam plant, which makes approximately $17,000,000 worth of equipment of steam-producing energy for $2,500,000?

Mr. MARTIN. I can not accept your premise.

Mr. MILLER. I am talking about the money consideration. Of course, we have differed in many things, but that is the cold, God's honest truth so far as what you pay is concerned, is it not?

Mr. MARTIN. Suppose we do not get the lock.

Mr. MILLER. That is what you pay in cash?

Mr. MARTIN. If we pay that much cash we build the lock, which is $2,500,000, and give it to the Government.

Mr. MILLER. You do what?

Mr. MARTIN. We build the lock and convey it in fee to the Government on the completion of its construction; we agree to convey it.

Mr. MILLER. You build the lock?

Mr. MARTIN. Yes; and we agree to convey to the Government in fee the lock on completion. Then that money which goes into the lock is part of the money which we put up and must be taken into account as a part of the $5,000,000.

Mr. MILLER. And be deducted therefrom?

Mr. MARTIN. Yes; we convey to the Government that equipment.

Mr. MILLER. You pay to the Government $2,500,000 in the cost of the lock and $2,500,000 in cash. Let us take it that way. The steam plants we are turning over to you cost the Government approximately $17,000,000, which you are paying for partly in a lock and partly in cash to the Government?

Mr. MARTIN. And power.

Mr. MILLER. That would leave it this way: Taking into consideration the $2,500,000 deduction for the lock, you then very clearly have figured that the balance of $2,500,000 shall be the payment for these other things.

Mr. MARTIN. No.

Mr. MILLER. How do you figure it, or did you figure it in reference to that?

Mr. MARTIN. We just figured the money which we could afford to pay, plus the 100,000 horsepower.

Mr. MILLER. You did not figure it as completely at random as that, did you? Your men figured out this thing, did they not? Did they not appraise the value of the Warrior steam plant to you in carrying out your purposes?

Mr. MARTIN. I can only answer what I stated, that we have presented it as a whole. We propose to give the Government 100,000 horsepower and $5,000,000 for the property. That is the way we figured it out, and that is the best answer I can make to you.

Mr. MILLER. You can not give us any idea at what your company, in figuring this thing out so that you could make this proposition to the Government, valued the steam plant at the Warrior substation?

Mr. MARTIN. I have given you the best answer I can.

Mr. MILLER. What did you say?

Mr. MARTIN. The whole proposition you have to take together. It is a question of financing the whole situation to completion, of raising the money and providing the Government with 100,000 horsepower and paying the Government $5,000,000. You have to recognize all those things as balancing one against the other.

Mr. MILLER. But, Mr. Martin, I presume every man around this table has more or less figured in propositions of this kind and he has brought in, in making up his figures, all the items in connection with various things all the way down, and then, taking a complete schedule and making the proposition based on that. Is not that the way it is done?

Mr. MARTIN. Mr. Miller, I have told you over and over again that all we did was to consider this situation as a whole. We have made a proposition to give the Government power and complete the financing and construction of this job and pay $5,000,000 in money. We can not separate one from the other because we did not make our calculations that way, and here we are.

Mr. MILLER. Is there any electrical energy generating machinery at nitrate plant No. 2 that would be included in this transfer to you?

Mr. MARTIN. There is the steam plant.

Mr. MILLER. All of the generating machinery there and at the Warrior River extension—all of that machinery is in good condition, and you are paying a rental of $10,000 a month for that extension?

Mr. MARTIN. Yes; it is located 90 miles from our Warrior plant.

Mr. MILLER. It is a permanent form of construction, brick buildings, and all those things?

Mr. MARTIN. Yes.

Mr. MILLER. What did you or your engineers figure was included in the steam plant at nitrate plant No. 2? You certainly had some idea as to whether there was 1 acre or 10 acres of land?

Mr. MARTIN. I do not know that it was figured as a matter of acreage. It would be whatever is reasonable and necessary to maintain a plant and operating facilities and facilities for the men.

Mr. MILLER. Is that as close as you can come to it?

Mr. MARTIN. No, sir. If you were preparing a deed, and it was a question of making a deed ready for signature and execution, we would, of course, be more exact. All of those things are easily adjusted, because I assume we would go into it more carefully than we could do it here to-day. It has to work itself out.

Mr. MILLER. That more than excites my curiosity. That contract of December 1, 1917, is so very much in detail and every possible thing covered that could possibly be included in a contract, and then when it comes to this transaction you are so very general. That excites my curiosity. I do not mean any reflection on you. I wondered if you had not figured things down to the same nicety in this proposition you are making now that you figured on the contract of December 1, 1917.

Mr. MARTIN. I do not suppose we devoted five minutes to the question of how much acreage was involved in the Sheffield steam plant.

Mr. MILLER. Then it is a mere matter of indifference as to how much it involves?

Mr. MARTIN. No; because it was simply expressed as so much land and housing facilities. Any two men familiar with steam-plant operation could agree in an hour's time on what is necessary and what is not necessary.

Mr. JAMES. The Alabama Traction, Light & Power Co. (Ltd.) is a Canadian corporation?

Mr. MARTIN. Yes, sir.

Mr. JAMES. What is the capital stock of that company?

Mr. MARTIN. I think it is $17,000,000 in common stock.

Mr. JAMES. The Alabama Power Co. is a subsidiary concern of the Alabama Traction, Light & Power Co. (Ltd.), is it not?

Mr. MARTIN. Limited in that relation.

Mr. JAMES. Which company will handle this proposition, the Canadian company or the Alabama Power Co.?

Mr. MARTIN. The Alabama Power Co. The Canadian company is no longer a business factor in the situation because it came into it prior to 1914 simply as a company through which we could raise money abroad. The conditions have entirely changed since 1914, and that company is not in such relation to our company or to the public as that it can command money on its securities.

Mr. JAMES. Is not the Alabama Power Co. a subsidiary of the Alabama Traction, Light & Power Co.?

Mr. MARTIN. Yes; I have explained that at great length.

Mr. JAMES. How long have you had your home office in Birmingham?

Mr. MARTIN. Since 1912.

Mr. JAMES. How do you account for the people down there considering your company a foreign corporation—that is, the people of Birmingham?

Mr. MARTIN. Propaganda which emanates from people who are opposed in Washington to our proposition.

Mr. JAMES. Did they not have a mass meeting down there the other night, with about 3,000 representative people present, and adopt resolutions stating that your company was a foreign corporation?

Mr. MARTIN. When?

Mr. JAMES. About a week or ten days ago.

Mr. MARTIN. I think there was a meeting held there and the man, or one of the men, who had the most to do with getting it up is one of the men who has been in this very hearing advocating another proposition as opposed to ours—Mr. J. W. Worthington. He had more to do with getting up that meeting than anybody else.

Mr. JAMES. There were about 3,000 people there, as I understand it.

Mr. MARTIN. I do not know how many there were.

Mr. JAMES. The resolution states that this is a foreign corporation.

Mr. MARTIN. And the resolution is untrue; the Alabama Power Co. was organized under the laws of the State of Alabama.

Mr. JAMES. How long since Mr. Washburn was president of the Alabama Power Co.?

Mr. MARTIN. I have answered that before; he resigned as president of our company in the year 1915.

Mr. JAMES. Do you know when he was president of the American Cyanamid Co.?

Mr. MARTIN. I think the record shows that, too.

Mr. JAMES. He was president of both companies at the same time, was he not for a while?

Mr. MARTIN. I think he was prior to the year 1915.

Mr. JAMES. President of both companies?

Mr. MARTIN. For one or two years about that time.

Mr. JAMES. Do you consider Mr. Ford's offer as dated January 26, 1922?

Mr. MARTIN. The offer which as I understand it is being considered by the committee is so dated.

The CHAIRMAN. It is dated January 25, 1922.

Mr. JAMES. He started to deal with the Government about last July.

Mr. MARTIN. Yes, sir; and we started to deal with the Government in 1913.

Mr. JAMES. Really his offer is the offer of last July, modified?

Mr. MARTIN. Yes, sir.

Mr. FIELDS. Mr. Martin, I would like to follow Mr. Miller's inquiry a little further in reference to Maj. Runcie. You say he had been practicing law, that he was retired from the Army and was practicing law?

Mr. WEATHERS. Yes.

Mr. FIELDS. Where did he practice law?

Mr. WEATHERS. I knew of him practicing law in Cuba. I know he also practiced law in this country.

Mr. FIELDS. Do you know what city in this country?

Mr. WEATHERS. I do not know.

Mr. FIELDS. Do you know whether or not he practiced law in New York?

Mr. WEATHERS. No; I do not.

Mr. FIELDS. You could not name any city in this country in which he practiced law?

Mr. WEATHERS. No.

Mr. FIELDS. I am asking you these questions because it is a little strange to me, unless this officer was not from New York, that each of the emergency officers who had to do with this contract came from the city of New York, two of them from one institution, and I am just wondering if this man—I do not know how they happened to be detailed there—was from New York, too.

Mr. WEATHERS. Maj. Runcie was as punctilious a man as you ever saw. He had all the traditions of the Regular Army.

Mr. FIELDS. I just wanted to know where he was from.

Mr. WEATHERS. I do not know where he was from originally.

Mr. MARTIN. I would like to correct the record there. I do not know of any two men from the same institution in New York.

Mr. FIELDS. It was stated that Lieut. Col. Williams and Lieut. Col. McRoberts were both from the National City Bank. That was developed at different times, I think.

Mr. MARTIN. There was a question asked, and I will correct it here, so far as anything I know is concerned. Lieut. Col. William Williams was a lawyer, practicing in New York City. If he ever had any connection with banks I know nothing of it. I knew nothing about him until he came into these negotiations as a lawyer representing the Government. His office is in New York, at 15 Broad Street.

Mr. FIELDS. I believe he is in Japan at the present time?

Mr. MARTIN. He has nothing to do with any bank that I know anything about. So far as Mr. McRoberts is concerned, I never heard of a Mr. McRoberts in connection with this contract, and I do not think his name appears in any connection with any of the contracts.

Mr. FEILDS. Possibly he was connected with the Air Nitrates Corporation contract.

Mr. MARTIN. That may be.

Mr. FIELDS. I think what I have referred to was brought out in a question propounded by Mr. Quin. He asked a question if that bank was not a Rockefeller bank, and that is the reason why I remember that particular proposition.

Mr. MARTIN. Of course, questions oftentimes are asked with the idea of leaving an impression on the record which the witness can not answer and does not answer, and the question is left on the record. That has been the case with many questions asked here.

Mr. FIELDS. No; I think most questions asked here have been asked in a spirit of fairness, and they have been asked in an effort to get information that the committee was entitled to.

I would like to get a little more information about this lock you are to build in Dam No. 2, which you estimate will cost $2,500,000. Of what value will that be to the Government without the completion of the navigation project on the Tennessee River? Will it be of material value to the Government?

Mr. MARTIN. It will be just as valuable to the Government as are the present canals in that stretch of the river; it will be just as valuable to the Government as would the lock facilities at Dam No. 3.

Mr. FIELDS. But the lock at each dam would be more valuable if both dams were built.

Mr. MARTIN. Yes; and they would all be more valuable if you built the other five dams in the other stretch of the river, which needs improvement.

Mr. FIELDS. The lock would not be as valuable if only one dam was constructed as it would be if No. 3 and possibly the other dams were constructed.

Mr. MARTIN. It will not serve with real usefulness until Dam No. 1 is built, then Dam No. 2, and then you have to build Dam No. 3, and then the five other dams referred to this morning. When all these eight dams are built the dam will serve its full usefulness.

Mr. FIELDS. It will not serve its full usefulness or be of very much service to the Government unless Dam No. 3 is constructed, which will enable traffic to get over the shoals.

Mr. MARTIN. That is true. It will not really serve its full usefulness, as I say, until the entire stretch of river is improved.

Mr. FIELDS. I am trying to find what return the Government will get from the $2,500,000 which you estimate it will cost, and which Col. Cooper estimated at $4,500,000.

Mr. MARTIN. I think you will find that the $4,500,000 includes other lockage facilities. Of course, as a matter of engineering, it is desirable to complete the work while it is in progress.

Mr. FIELDS. I believe it was your contention that your company needs the Muscle Shoals power to supply the country that you are now supplying, the country contiguous thereto, which could be supplied with the kind of service the public now gets?

Mr. MARTIN. Yes, sir; we think we are rendering there a very high degree of public service.

Mr. FIELDS. In the last few days I have been reading a book entitled "Water Powers of the World," from which I find that Muscle Shoals is the greatest source of water power east of the Mississippi River, and possibly in the Mississippi Valley, and also possibly greater than any in the United States outside of the Columbia River in the West. I also find that in this territory where you are operating there is yet a great deal of undeveloped power. I realize the necessity of an ample supply of the character of service you are giving, but it has occurred to me that the whole public would be better served by the development of these lesser sources of supply for that character of service, and that we should have the development of one of the greatest assets in water power, in whole or at least in part, for the production of fertilizer.

Coming down to that point, the difference I see between your offer and Mr. Ford's offer is this: He binds himself to operate that plant at its maximum, which would possibly require primary horsepower, would it not, if he operates it continuously? He can not depend upon secondary power to do so.

Mr. MARTIN. I do not so understand it, Mr. Fields.

Mr. FIELDS. If that be true, he is to devote 100,000 primary horsepower, which, on the basis of cost presented to the committee by Col. Cooper, would be $287,300 a year, where your 100,000 secondary horsepower would be worth, at the maximum, $78,000.

Mr. MARTIN. If you are going to put the primary power in that position, where do you come out on fertilizer?

Mr. FIELDS. The thing that has been worrying me all the time, with the great plant, like nitrate plant No. 2 at Muscle Shoals, with the steam power sold away from it, which your proposition would do, and left solely dependent upon 100,00 secondary horsepower—I am wondering whether anybody in the United States would take hold of it under a handicap of that kind.

Mr. MARTIN. Let us take your idea of using primary power in the manufacture of fertilizer. When it comes to the question of setting up your costs on the manufacture of fertilizer, what are you going to charge primary power in for? It has a sale value of $25 per horsepower per year. If you put primary power in at $25 per horsepower per year you will find you can not give away your nitrates, much less sell them, because the price for power will make the ultimate cost prohibitive.

Mr. FIELDS. I see the advantage of having it altogether instead of having it separate. Having it altogether, it would be operated in the main by secondary power, or possibly secondary power supplemented by steam power.

Mr. MARTIN. If you want to put it on that basis, here is a steam plant capable of generating steam power, and we will sell anybody who wants to make fertilizer there all the steam power he wants or needs cheaper than he can manufacture it himself. That plant is there, always subject to public regulation and anybody can buy the steam power.

Mr. FIELDS. The Government or the lessee would have to buy it, and the thing that has been running through my mind is——

Mr. MARTIN (interposing). How much steam power you want.

Mr. FIELDS. Would anybody lease this plant under limitations of that character? I fear they would not.

Mr. MARTIN. You can buy all the steam power you want; that is to say, you can buy the coal or so much power for this plant for as many days and months as you want it for the manufacture of fertilizer or anything else and not be under any obligation for the maintenance and upkeep of the plant. That is the business of a public service company, Mr. Fields. With the steam plant there in the hands of a public service company that can always respond to a call of that character, with secondary power there at any price the Government sees fit to make it, available for nothing, if you want it, every facility is made available for whoever wants to go there and manufacture fertilizer.

Mr. FIELDS. But viewing it in my mind from the standpoint of the agricultural interests of the country, there is a great difference between making the production of nitrogen the first consideration and operating the whole thing combined and developing it, and making the production of nitrogen the second and last consideration.

Mr. MARTIN. Let me suggest this to you: Take the case of coal mines down in Alabama or somewhere else. In Alabama the coal industry has developed remarkably in recent years. Our company is supplying power to-day to 40 or 50 coal mines, large and small, with which to operate the trolley cars, with which to pump the water in and pump the water out, and to conduct all of the direct and incidental operations around the plant, in lieu of what? In lieu of the steam power which the mines had been accustomed to use in the past, and we are selling that power to those mines cheaper than they can manufacture steam power at their own mines and with their own coal right at their mines, delivering it hundreds of miles away to mines for use in the mining of coal.

There is another instance where we are selling a cotton mill in our State, one of the largest in the United States, this power. It bought its coal and set up its plant at the mouth of the coal mine. That plant is closed down and we are generating and delivering power to that cotton mill for the operation of its entire facilities much cheaper than it can manufacture power from its own plant at the coal mine. We are to-day serving power for all the cotton industries in Alabama, with the exception of two plants, north and south, every company; serving them power from a central station. Why do they take it? Because they can get it cheaper.

Mr. FIELDS. You stated that if the operator of plant No. 2, whether the Government or a lessee of the Government, should need steam power to supplement secondary power which you are to furnish, you are to furnish it to that operator. I believe you have stated that the price of power would probably continue to go higher, so if there should be an increase in the price of power from time to time he would have to pay the market price at the time he used the power. Do you think that any man would enter into a contract with the Government as a lessee, or do you not think the very fact that if he wanted to operate this plant continuously he would have to depend a portion of the time upon steam power which he must purchase from you, not knowing what the price might be in the future—that he would consider that an item of very great concern? Would not you as a business man, or any other man, so consider it?

Mr. MARTIN. No; when you get into this question of power there are certain fixed determined elements involved.

Mr. FIELDS. Based upon present-day conditions.

Mr. MARTIN. Take the water-power development.

Mr. FIELDS. We do not know what it will be 25 or 40 years hence.

Mr. MARTIN. That is very true, and when you come to fix the price for power, the value of power 40 years hence, that question goes back in part to the original cost of the property.

Mr. FIELDS. You are referring to hydroelectric power; you are not referring to steam power.

Mr. MARTIN. Your question is——

Mr. FIELDS (interposing). With this additional cost.

Mr. MARTIN. Your steam power to be used to supplement water.

Mr. FIELDS. Yes. You can realize that there may be in the future a very great difference in the cost of power.

Mr. MARTIN. Nevertheless, when you come to your question of additional cost, if you please, of steam power, in percentage of the whole cost it would be very small, that is the mere additional cost, in the total cost of the fertilizer to the public, and it may be an element or it may not be an element. Relatively, there would be very little steam power used. You are going to find before you get through with these investigations that the idea of making this nitrate fertilizer, following the cyanamid process, is not going to be the process that is going to survive. It is going to be a process which is going to use a less volume of power with greater efficiency.

Mr. FIELDS. Regardless of the amount of power used, if it is desired to operate continuously, and you can secure hydroelectric power for only 10 months out of the year, they must supply themselves with steam power for 2 months out of the year. That is one-sixth of a year, and it would become a very great element in the operation of the plant and in the cost of the product.

The CHAIRMAN. Gentlemen of the committee, Mr. Dent, I understand, is staying here to-day to allow an Army officer to be heard to establish some facts that Mr. Dent desires to establish, and I hope we can let him get away by half past 4.

Mr. MCKENZIE. Mr. Martin, your proposition, of course, means that you will construct the dam under the Federal water power act?

Mr. MARTIN. Yes, sir.

Mr. MCKENZIE. That being true, will you be obligated to pay to the Government any fees, such as license fees, or will there be any expense to you in that connection?

Mr. MARTIN. I am very glad you mentioned that. That is true.

Mr. MCKENZIE. You have taken that into consideration?

Mr. MARTIN. Yes; that has been taken into consideration. There is a large site fee, based on the horsepower capacity of the stream.

Mr. MCKENZIE. The items you are to purchase and the cost have been gone over many times, and I do not care to go into them in detail at this time, but I want to ask you whether or not it is a fact that the primary horsepower you expect to get from this development is the main consideration leading you to make the proposition which is now before us?

Mr. MARTIN. That is so, of course.

Mr. MCKENZIE. In coming to a conclusion in this matter have you taken into consideration what effect it may have upon the stocks of the Alabama Power Co.?

Mr. MARTIN. I can not say that we have.

Mr. MCKENZIE. You did not take into consideration the fact that this plant being the greatest water power in the South and located as you have indicated it on the map, permitting greatly increased business by your company, would have a very great effect upon your stock?

Mr. MARTIN. It does naturally have an effect in a business way upon the securities of a company of this kind, but I do not know to what extent it will affect the securities of our company.

Mr. WURZBACH. What property would your company acquire in fee if your order was accepted that would not include property in fee acquired by the Ford company if their offer was accepted?

Mr. MARTIN. We do not purchase or undertake to purchase nitrate plant No. 1. We do not undertake to purchase nitrate plant No. 2, with the exception of the steam plant at that location, nor the Waco quarry. So the Government is alone in its position as the owner of the two nitrate plants and the Waco quarry, except that we take the steam plant at No. 2. There is a marked difference between this proposition and the other proposition you are considering, as respects the No. 2 development. We propose to the Government to take the title by deed from the Government of the Wilson Dam property and go forward and complete it.

Mr. WURZBACH. I understand that.

Mr. MARTIN. The effect of that has a very important aspect locally, because it brings that property under local taxation laws, and, you see, the project will then bear its local burden of taxation, and at the same time the Government has its right of recapture of that project at the end of 50 years. As respects a lease, of course, if the Government would want to retain the title and lease the project and finance it, that has a very different aspect.

Mr. WURZBACH. With reference to the two nitrate plants, is it contemplated that Mr. Ford would get title in fee to the two nitrate plants; is that your understanding of the Ford offer?

Mr. WURZBACH. That is my understanding of the project, Mr. Wurzbach.

Mr. WURZBACH. In section 5 of your offer it is provided "The Government is to transfer to the licensee the Wilson Dam property represented by its investment and commitments to date, free of liabilities and unencumbered, including the construction plant." What do you understand as being included within the construction plant of the property?

Mr. MARTIN. Those derricks and tracks and dumping facilities and camps that are there now, to-day—whatever is there constituting a construction plant.

Mr. WURZBACH. That would not be included in the Ford title as passing title in fee to Mr. Ford.

Mr. MARTIN. I do not recall. However, it is included in the $17,000,000 already invested in the dam.

Mr. WURZBACH. You are familiar enough with the Ford offer to know whether or not it is to be included, whether Mr. Ford would receive title to the construction plant under his offer, are you not?

Mr. MARTIN. I do not understand that he asks for title to any of that property, but I do not recall that matter.

Mr. WURZBACH. If Mr. Ford is not to receive that property and your company is to receive it, the value of that property would be the difference between your offer and Mr. Ford's offer, would it not?

Mr. MARTIN. It is all there available for use to whoever undertakes to complete this construction, whether our company or some one else will use that plant. At the end of its use it has a salvage value, but not much.

Mr. WURZBACH. Is it not a fact, Mr. Martin, that at the present time that property has a book value of $4,740,807; that is, nearly $5,000,000.

Mr. MARTIN. The construction plant?

Mr. WURZBACH. Yes.

Mr. MARTIN. I really do not know. We are treating the question on the basis of $17,000,000.

Mr. WURZBACH. I have been informed by Army officers that that is the book value, and that the estimated value at the present time is about $2,990,433. If that is true, and if it is also true that you are to receive this property under your offer and Mr. Ford is not to receive it under his offer, then there is that much difference in favor of the Ford offer over your offer.

Mr. MARTIN. No. Mr. Ford gets the nitrate plants and Waco quarry, in which the Government has an investment of $87,000,000. Let us follow that a step further. In its present position, under the other offer to which you refer the licensee or the lessee will go forward with that construction. By the time he uses it in the Wilson Dam construction, and then moves it to Dam No. 3 and gets through with it there, it will be junk anyway, so it will all be used or consumed in that construction and at the end of six years it is not worth anything. I think you will find that to be the situation upon investigation. There is a great deal of that construction plant. There is a temporary concrete highway constructed entirely across this river. It represents many thousands of dollars. It is worth nothing except for that immediate use. You will find a great deal of this construction plant has no recoverable value.

Mr. WURZBACH. I understand that amount of $4,740,807 is made up of the following items: Material and supplies, $500,480; plant and equipment, $2,331,097; main-line railroad and equipment, $801,110; camps, housing, etc., $1,108,120. The plant and equipment is worth about the book value, is it not, or very near the book value?

Mr. MARTIN. I can not say that any camp or equipment purchased during the war period is worth its book value now.

Mr. WURZBACH. Under the Ford offer at this time the Government would have the right to sell this property.

Mr. MARTIN. Of course.

Mr. WURZBACH. And salvage this property without in any way affecting the offer of Mr. Ford.

Mr. MARTIN. I do not know; I can not answer that question. I would have to reserve the right to answer it at another time.

The CHAIRMAN. We are very much obliged to you Mr. Martin. You have been very patient. We will now call upon the military officer whose evidence Mr. Dent desires to introduce.

STATEMENT OF MAJ. JOHN G. BOOTON, ORDNANCE DEPARTMENT, IN CHARGE OF CONTRACT SECTION, ORDNANCE DEPARTMENT, AND CUSTODIAN OF THE RECORDS OF THE CONTRACT SECTION.

The CHAIRMAN. Will you state to the reporter your name in full, your rank, and also the position you occupy in the War Department?

Maj. BOOTON. Maj. John G. Booton; Ordnance Department; in charge of the contract section of the Ordnance Department and custodian of the records of the contract section.

The CHAIRMAN. How long have you been in the War Department?

Maj. BOOTON. As an officer of the War Department?
The CHAIRMAN. Yes.
Maj. BOOTON. Since 1911.
The CHAIRMAN. Were you a private before you became an officer?
Maj. BOOTON. I was a graduate of the United States Military Academy, entering in 1906.
The CHAIRMAN. Mr. Dent wants to ask you a few questions, and he will kindly propound them now.
Mr. DENT. Major, you say you are the keeper of the records, contracts, orders, and regulations by the Secretary of War in the Ordance Department?
Maj. BOOTON. Yes, sir.
Mr. DENT. Has your attention been called to the contract relative to the Gorgas plant between the Government and the Alabama Power Co.?
Maj. BOOTON. Yes, sir; within the past three or four days.
Mr. DENT. Are you familiar with the act of July 9, 1918, authorizing the sale of war materials, supplies, and so forth?
Maj. BOOTON. Yes, sir.
Mr. DENT. Did the Secretary of War make any order or regulation relative to that act; and, if so, when, and will you please produce it?
Maj. BOOTON. The Secretary of War on August 31, 1918, issued Bulletin No. 50, headed "War Department, Washington, August 31, 1918," article 5 of which quotes an extract of the act of Congress on the sale of war supplies; that is, the act approved July 9, 1918, and further provides that—

"2. (*a*) Bureaus of the War Department desiring to sell supplies embraced within the provisions of this act, the cost price of which is in excess of $5,000, shall secure the approval of the Director of Purchase, Storage and Traffic Division, General Staff, except in the Philippine and Hawaiian Departments, where the authority of the department commanders is sufficient.

"(*b*) Upon receipt of such approval from the Director of Purchase, Storage and Traffic, such supplies which are intended for sale to persons, partnerships, associations, and corporations will then be disposed of unless otherwise directed by the Director of Purchase, Storage and Traffic, for cash at auction, or to the highest bidder on sealed proposals, on due public notice, and in such market as the public interests may require. The officer making the sale will suspend it when in his opinion better prices can be obtained. The auctioneer's certified detailed account of the sale, and the vouchers for the expenses attending it, will be reported on the proper forms to the chief of the bureau to which the property pertained. Such supplies as are intended for sale to any other department of the Government or to any foreign State or Government engaged in war against any Government with which the United States is at war shall be at not less than the invoice price, including cost of inspection and transportation.

"(*c*) The proceeds of sales shall be deposited to the credit of that appropriation out of which was paid the cost to the Government of the property thus sold, and the same shall immediately become available for the purposes named in the original appropriation."

Mr. DENT. Was any order made relative to contracts of this character by the Purchase, Storage and Traffic Division of the General Staff?
Maj. BOOTON. There was Supply Bulletin No. 13, headed "War Department, Purchase, Storage and Traffic Division, General Staff, Purchase and Supply Branch, Washington, August 3, 1918," reading as follows:

"Subject: Contract provisions regarding increased manufacturing facilities.

"1. Where increased manufacturing facilities are constructed at the expense of the Government or where their cost is amortized in the price paid by the Government, the contract shall provide that title to such facilities shall vest in the United States. The contractor may agree to take such facilities at a fair value in diminution of the profit which he otherwise would make.

"2. Where title to increased manufacturing facilities vests in the United States, the contract shall provide that the contractor may make written offer in the Government to purchase such facilities, whereupon, if the Government accepts such offer, the contractor shall become obligated to pay for such facilities at their appraised value at that time. The contract shall further provide that if the contractor does not make or the Government does not accept such offer, the Government shall have the right to remove such facilities after the termination of the contract within a time reasonably sufficient to effect such removal. The contract may provide that the Government shall have an option at the termination of the contract to purchase at an appraised value the land on which such facilities are erected.

"3. If, in any case of such increased manufacturing facilities, it is desired to make a contract along lines different from those herein established, the approval of the superior board of review shall first be secured."

That was signed by authority of the Secretary of War by George W. Goethals, major general, Assistant Chief of Staff, Director of Purchase, Storage and Traffic. The last paragraph refers to the superior board of contract review in the General Staff.
Mr. DENT. Have you any record of the action of the Chief of Ordnance in appointing contract officers to execute contracts for the department, and any records relative to this particular contract?
Maj. BOOTON. I have an office order, No. 157, of 1918, which appoints, among others, William Williams, lieutenant colonel, Ordnance Department, National Army, as a contracting officer.
Mr. DENT. What was the date of that?
Maj. BOOTON. This is order No. 157. No. 156 is dated February 26, 1918, and No. 158 is dated March 5, 1918, and in looking up some other records I find March 2 given as the date of the appointment of Lieut. Col. Williams.
Mr. DENT. Who signed this contract?
Maj. BOOTON. Who signed this contract, and whose name appears on this order. This office order for some reason is not dated.
Mr. DENT. Have you a record showing that the board of review approved this contract?
Maj. BOOTON. The office order 157, to which I just referred, reads as follows:

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, March 3, 1918.

Office order No. 157 (authority to execute contracts).

1. Office order No. 145, relating to officers authorized to execute contracts, is hereby rescinded, and the following substituted therefor:

"1. Contracts with private manufacturers to meet the schedules of requirements for ordnance and ordnance stores and supplies will be executed only by the procurement divisions of the Ordnance Office. The following officers, but no others, are hereby authorized to execute such contracts: Samuel McRoberts, colonel, Ordnance, N. A.; Charles N. Black, lieutenant colonel, Ordnance, N. A.; R. P. Lamont, lieutenant colonel, Ordnance, N. A.; William Williams, lieutenant colonel, Ordnance, N. A.; C. F. Cook, major, Ordnance, N. A.

"2. Paragraph A of section 6 of officer order No. 104 is hereby amended to the extent necessary to give effect to the foregoing."

C. B. WHEELER,
Brigadier General, Ordnance, N. A.,
Acting Chief of Ordnance.

Official:

W. S. PEIRCE,
Brigadier General, Ordnance, N. A.

Copies sent to: Chiefs of bureaus and divisions, heads of sections, and arsenals.

I find by examination of the records that William Williams, lieutenant colonel, Ordnance Department, National Army, was contracting officer until February 4, 1919, continuing from March 2, 1918.
Mr. DENT. I asked you about the board of review approving this contract.
Maj. BOOTON. There is attached to the retained copy of the contract in the nitrate division an approval carrying the signature of the officers approving the contract, and the statement "approved by Board of Contract Review of Procurement Division, November 8. W. Arthur Babson, secretary." That board was an ordnance function, a committee appointed by the order of the Purchase, Storage and Traffic Division of the General Staff.
Mr. MCKENZIE. Are the names of the officers attached there?
Maj. BOOTON. Yes, sir.
Mr. MCKENZIE. Will you please read those names?
Maj. BOOTON. They are J. W. Joyes, colonel, Ordnance, United States Army; C. F. Beames, major, Ordnance Department, United States Army; E. V. Pren-

tiss, major, Ordnance Department, United States Army; G. M. Alexander, captain, Ordnance Department, United States Army; Dale Bumstead, lieutenant, Ordnance Department, United States Army. Then there is typed an officer's signature, R. H. Swartwout, which is initialed "R. H. S."

Mr. DENT. What is this memorandum here [handing paper to witness.]

Maj. BOOTON. I do not know the significance of that.

Mr. DENT. You had better put that in the record.

Maj. BOOTON. On the side is written in handwriting "I concur in the approval of this contract. A. W. Burchard."

Mr. MCKENZIE. Col. Joyes was chairman of the board of review, I take it.

Maj. BOOTON. He was the senior officer; there were six initiators, each of whom was responsible for his separate detail. Col. Joyes was senior and in charge of the nitrate division, so he was the one most interested.

Mr. MCKENZIE. Have you found anything in your records down there in looking this thing up to indicate that the Secretary of War gave any directions in connection with this matter.

Maj. BOOTON. No, sir; nothing at all.

Mr. MCKENZIE. You have not found anything in the records at all to indicate the approval of the Secretary of War.

Maj. BOOTON. Except the approval by authorized agencies of his.

Mr. MCKENZIE. Those agencies were all subordinate officers to the Chief of Ordnance.

Maj. BOOTON. No, sir; there is also the approval of the clearance committee of the Purchase, Storage and Traffic Division of the General Staff.

Mr. MCKENZIE. He was a subordinate officer.

Maj. BOOTON. To the Secretary of War.

Mr. MCKENZIE. And also to the chief of the Purchase, Storage and Traffic Division.

Maj. BOOTON. Yes, sir; the chief of the Purchase, Storage and Traffic Division was at that time in charge of all activities of the staff purchasing departments.

Mr. MCKENZIE. Was that Gen. Goethals?

Maj. BOOTON. That was Gen. Goethals; yes, sir.

Mr. MCKENZIE. Does his name appear in any way connected with this matter.

Maj. BOOTON. No, sir; the approval was made by a committee of the Purchase, Storage and Traffic Division, acting I suppose in his name. The only thing I was able to find was a certificate in handwriting by Maj. Beames that this project was approved under clearance No. 1285 on November 9, 1918.

Mr. MCKENZIE. Then the officer of the highest authority connected with this whole proceeding was the Chief of Ordnance, Gen. Williams.

Maj. BOOTON. His name does not appear directly as an initiator or as signing the contract.

Mr. MCKENZIE. He delegated to the various officers the authority to act in the capacities in which they did act.

Maj. BOOTON. Yes, sir.

Mr. MCKENZIE. You have not anything beyond the Chief of Ordnance that would indicate that the Secretary of War had anything to do with it.

Maj. BOOTON. He delegated his authority to the Purchase, Storage and Traffic Division to approve forms and individual contracts, which is the reason for the approval by the clearance committee, and the Chief of Ordnance gets his general authority directly from the acts of Congress. In the Revised Statutes, section 1164, it is prescribed "it shall be the duty of the Chief of Ordnance, under the direction of the Secretary of War, to make contracts of purchase for procuring necessary supplies and ordnance stores for use of the armies of the United States."

Mr. MCKENZIE. That is true; but there is not anything whatever before the committee up to date that indicates that the Secretary of War had anything to do with either directing or procuring or preparing this contract.

Mr. DENT. Mr. Chairman, if I may interpose at this point the first document we offered was a general order issued by the Secretary of War authorizing contracts in the various departments to be made in this way. There was no specific authority for this particular contract, but general authority for contracts of this nature. That is the first document we put in the record this afternoon.

Mr. WURZBACH. That was with regard to the sale of supplies.

Mr. DENT. In connection with the act of July 9.

Mr. MILLER. Major, did I understand you correctly when you said this contract with the Alabama Power Co. was approved by the board of review on November 8, 1918?

Maj. BOOTON. That is what is set down here.

Mr. MILLER. The contract was not signed until the 9th; how do you figure that out?

Maj. BOOTON. It was approved prior to the signing. The approval was supposed to be before the signatures. Sometimes it was before the contracts were sent out and before the contractor was allowed to sign or before the Government released it.

Mr. MILLER. Then the board of review simply approved the phraseology of the contract?

Maj. BOOTON. Approved the phraseology in general. That was a legal board of review. The practical board of review were the negotiators, and the negotiators looked out for the business end of the contract. The board of review looked after the legal rights.

Mr. MILLER. Was that customary?

Maj. BOOTON. It was customary during the war.

Mr. QUIN. Have you the original drafts along with this contract?

Maj. BOOTON. This is the original signed copy; yes, sir.

Mr. QUIN. Are you the keeper of the records? Have you the correspondence between the parties at interest?

Maj. BOOTON. I have not got it here; but I can get it.

Mr. QUIN. Who is the keeper of that?

Maj. BOOTON. It is either in the general records or in the contract records.

Mr. QUIN. What officer would be the proper officer for us to call?

Maj. BOOTON. I can get it for you, and, usually, I would be the one to get it eventually.

Mr. QUIN. Please let me see the original draft.

Maj. BOOTON. Those are the signatures.

Mr. QUIN. Is that the same one that is printed?

Maj. BOOTON. So far as I know it is is. That is one of the office copies. Then, there is a lot of miscellaneous data attached, interoffice letters and instructions, etc.

Mr. QUIN. The evidence shows that there was correspondence and then memoranda, which we have not seen. Is that in here?

Maj. BOOTON. No, sir; it is not in there. This is more or less the final draft, rather than the preliminary negotiations. If you want those we can get them for you.

Mr. QUIN. Mr. Chairman, this gentleman is not the direct keeper of those things, but he says he can produce them—all of the documents and communications and memoranda in regard to this contract the 1st of December, 1917—from the beginning up to ultimate signing of it. Should we not call some other officer and get this information?

Mr. MCKENZIE. I suppose, if the members of the committee would like to have those matters presented, it might be well to have them brought up here.

Mr. DENT. Most of it has been put in the record already by Mr. Martin.

Mr. MCKENZIE. Major, we are very much obliged to you for coming up here and giving us the information you have put in the record.

(Thereupon the committee, at 4.45 o'clock p. m., adjourned until to-morrow, Friday, March 3, 1922, at 10.30 o'clock a. m.)

LIST OF MEMBERS OF NATIONAL FERTILIZER ASSOCIATION.

HONORARY MEMBERS.

George Braden, Louisville, Ky.
Gustav Jarecki, Cincinnati, Ohio.
William Prescott, Cleveland, Ohio.
J. Rice Smith, Augusta, Ga.
William T. Wuichet, Dayton, Ohio.

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Acme Manufacturing Co., Wilmington, N. C.
Adair & McCarty Bros. (Inc.), A. D., Atlanta, Ga.
Alabama Chemical Co., Montgomery, Ala.
Alliance Fertilizer Co., Alliance, Ohio.
American Agricultural Chemical Co., New York City.
American Cotton Oil Co., The, New York City.
American Fertilizer Co., Savannah, Ga.
Anaconda Copper Mining Co., Chicago, Ill.
Anderson Phosphate & Oil Co., Anderson, S. C.
Apothecaries Hall Co., Waterbury, Conn.
Arkansas Fertilizer Co., Little Rock, Ark.
Armour Fertilizer Works, Chicago, Ill.
Baltimore Pulverizing Co., Baltimore, Md.
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Baugh & Sons Co., Philadelphia, Pa.
Berkshire Fertilizer Co., Bridgeport, Conn.
Blackshear Manufacturing Co., Blackshear, Ga.
Blackstone Guano Co., Blackstone, Va.
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Calumet Fertilizer Co., New Albany, Ind.
Camp, William H. (Inc.), Petersburg, Va.
Canton Fertilizer Co., Canton, Ohio.
Capital Fertilizer Co., Montgomery, Ala.
Caraleigh Phosphate & Fertilizer Works, Raleigh, N. C.
Central Chemical Co., The, Hagerstown, Md.
Chamberlain & Barclay, Cranbury, N. J.
Chicago Feed & Fertilizer Co., Chicago, Ill.
Contentnea Guano Co., Wilson, N. C.
Cope & Daffin (Inc.), Savannah, Ga.
Cotton States Fertilizer Co., Macon, Ga.
Darling & Co., Union Stock Yards, Chicago.
Dainippon Jinzo Hiryo Kaisha (Ltd.), Tokyo, Japan.
Davison Chemical Co., Baltimore, Md.
Diamond Fertilizer Co., The, Sandusky, Ohio.
Dixie Guano Co. (Inc.), Suffolk, Va.
Drovers' Packing Co., Kansas City, Kans.
Empire Cotton Oil Co., Atlanta, Ga.
Empire State Chemical Co., Athens, Ga.
Etiwan Fertilizer Co., Charleston, S. C.
Exchange Supply Co., Tampa, Fla.
Farmers' Fertilizer Co., The, Columbus, Ohio.
Farmers & Planters' Co., The, Salisbury, Md.
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Georgia Fertilizer & Oil Co., Valdosta, Ga.
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Griffith & Boyd Co., Baltimore, Md.
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Jackson Fertilizer Co., Jackson, Miss.
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Mutual Fertilizer Co., Savannah, Ga.
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Painter Fertilizer Co., E. O., Jacksonville, Fla.
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Mitsui & Co., New York City.
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National Lead Co., New York City.
Naylor & Co., New York City.

Neville, McIver, Barnes & Co., Savannah, Ga.
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Palmer-Murphy Co., Atlanta, Ga.
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Robertson Lead Co., James, Baltimore, Md.
Robinson & Co. (Inc.), Dwight P., New York City.
Sackett, A. J., Baltimore, Md.
Schmaltz, Joseph H., Chicago, Ill.
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Southern Phosphate Corporation, New York City.
Southern Supply Co., Norfolk, Va.
Standard Potash Co., Omaha, Nebr.
Starnes Co., Birmingham, Ala.
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Struven & Co., Charles M., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.
Suter & Co., Eugene, New York City.
Taylor Commission Co., G. F., New York City.
Texas Gulf Sulphur Co., New York City.
Thew Automatic Shovel Co., Lorain, Ohio.
Tyler Co., W. S., Cleveland, Ohio.
Union Sulphur Co., New York City.
United Fertilizer Co., Milwaukee, Wis.
United States Industrial Chemical Co., Curtis Bay, Md.
Utah-Salduro Co., Salt Lake City, Utah.
Walker & Elliott, Wilmington, Del.
Walter Co., Edw. J., Baltimore, Md.
Ware Bros. Co., Philadelphia, Pa.
Wedge Mechanical Furnace Co., Philadelphia, Pa.
Werthan Bag Co., New York City.
Wessel, Duval & Co., New York City.
White & Co., Thomas H., Baltimore, Md.
Wiley & Co., Baltimore, Md.
Wisner & Stetson, New York City.
Wood, Henry H., New York City.
Young Commission Co., Memphis, Tenn.

MUSCLE SHOALS PROPOSITIONS.

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Friday, March 3, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

The CHAIRMAN. Gentlemen of the committee, this morning the committee will take up the offer of Frederick E. Engstrum for the Muscle Shoals property, and the clerk of the committee will first read, for the purpose of getting it into the record, the letter from the Secretary of War transmitting the offer of Mr. Engstrum for the Muscle Shoals property.

(The clerk read as follows:)

[House of Representatives. Document No. 193, Sixty-seventh Congress, second session.]

WAR DEPARTMENT,
Washington, February 24, 1922.

DEAR MR. SPEAKER: I inclose herewith an offer for the Muscle Shoals properties submitted by Frederick E. Engstrum which, I think, should be considered in connection with the investigations now being made by Congress.

Yours very truly,

JOHN W. WEEKS,
Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

FREDERICK E. ENGSTRUM,
Washington, D. C., February 23, 1922.

Hon. JOHN W. WEEKS,
Secretary of War, Washington, D. C.

SIR: I submit herewith amended proposal for the completion, lease, and operation of the Muscle Shoals project.

The declared policy of the United States as expressed in the national defense act of June 3, 1916, is to develop water power at the best location for the generation of electricity for the production of nitrates needed for the manufacture of explosives and fertilizer, and also to construct locks or lifts at such location as may be necessary for the improvement of navigation.

At that time, in the midst of war, the primary purpose was to make nitrates needed for explosives, while the making of the kind of nitrates needed for fertilizers and the improvement of navigation were of secondary importance.

To-day, in time of peace, the matter of primary importance is the making of the kind of nitrates needed for fertilizers. But to be prepared to make nitrates needed for munitions of war is still a matter of great importance, because the end of the supply of Chilean nitrates is already in sight, and besides the United States can not afford to be dependent upon any other country for an adequate supply of nitrates for explosives.

The Chief of Ordnance of the United States Army, in an official report to the Secretary of War on the advisability of completing the Muscle Shoals project in the interest of "nitrogen preparedness," under date of January 22, 1922, says:

"NITROGEN PREPAREDNESS.

"The main objective of the Ordnance Department in the matter of nitrogen compounds is to make the United States able to be self-sustaining in their supply in time of need. It believes that such ability can only be achieved

through the fixation of atmospheric nitrogen by one or more processes, and it further believes that the most economical and enduring method of developing nitrogen fixation is its establishment on a commercial basis."

Thus it is held that the development of nitrogen fixation from the air is now necessary as a measure of nitrate preparedness to keep the country self-sustaining in time of need, and that the best way to develop the nitrogen fixation process is its establishment on a commercial basis.

My proposal is designed to accomplish this very purpose and no other. I propose to devote the whole Muscle Shoals project to fixation of nitrogen from the air by the best-known process for making the best kind of nitrates needed for fertilizers, and to keep in readiness the best-known process for making the kind of nitrates needed for explosives, and also to operate a research plant for the development of better processes for the fixation of atmospheric nitrogen. I also provide for the development of navigation at Muscle Shoals as fast as the power dams are completed.

These objects can now be obtained by the completion of Dam No. 2. The expenditure of the money necessary to build Dam No. 3 can not at this time be justified on any grounds. I agree, however, that when required to do so by the Government, to build Dam No. 3 and to lease and operate the same on the same terms as Dam No. 2, also to build storage reservoirs and other power plants when required by the growing needs for nitrates.

I submit that to accomplish the public purpose in view the nitrate plants and the power to be developed should be leased to the same parties. The success of nitrate manufacture which can be economically used for fertilizer is dependent entirely on sale of power; without the support of the power development and sale of excess power to finance the nitrate plants it would not be possible to manufacture and sell such nitrates. The power end of the industry is to be solely developed for the benefit of the nitrate plants and fertilizer factory. The separation of such plants and factory from the power would destroy the unity and purpose of the industry.

The other outstanding features of my proposal may be summarized as follows:

1. The United States is not divested of title to any of its property, but retains ownership and preserves assets of approximately $141,000,000.

2. Returns from investment on a basis of 400,000 kilowatts gross development under my lease will pay to the Government approximately $3,500,000 per year for 50 years, or a total at compound interest at 4 per cent of approximately $537,000,000, which cash will be used to produce cheap nitrates for fertilizer or will be turned into the Treasury at the option of the Government. This is a liberal return for investment of the Government to produce the indicated power.

3. I propose to devote the entire power development to the fixation of nitrogen from the air and to the manufacture of fertilizers, including the operation of a research plant for the development of the improved methods for the reduction of the cost of producing such nitrates.

4. The method proposed to finance, by the sale of excess power, the manufacture of nitrates is the only possible method by which nitrates can be produced under present known methods, and sold to the American farmer at a price less than the Chilean products. The quantity of nitrates and fertilizers annually produced will be limited only by the amount of excess power sold and the price at which the nitrates may be sold.

Respectfully submitted.

FREDERICK E. ENGSTRUM.

PROPOSED CONTRACT FOR COMPLETION AND LEASE OF MUSCLE SHOALS BY FREDERICK E. ENGSTRUM.

1. *Parties.*—Memoranda of contract made this ——— day of ———, 1922, by and between the Government of the United States, party of the first part, and hereinafter referred to as the Government, and Frederick E. Engstrum, of the city of Washington, D. C., for and in behalf of a corporation to be formed by him to carry out the provision of this contract and to be governed by a board of seven directors, one to be selected by the Secretary of War, one by the Secretary of Agriculture, and the remaining five by proponent, party of the second part, and hereinafter referred to as the lessee.

2. *Lease.*—The lessee hereby leases all the property—real, personal, or mixed—now owned or hereafter acquired by the Government in connection with or forming part of, or the possession, use, construction, maintenance, operation, or extension of the Muscle Shoals project, or any part or appurtenance thereof, including the steam plant, located at Gorgas, Ala., on the Warrior River, together with transmission lines. Said property is included or intended to be included in the maps, deeds, descriptions, invoices, lists, and schedules furnished to the lessee by the Government and receipted for, and such maps, deeds, descriptions, invoices, lists, and schedules, together with the receipts for same, hereinafter referred to as the schedule, shall be a part of this agreement and shall bind both parties as truly as if they were written herein.

3. *Term.*—This lease is to continue in full force for a period of 50 years from date the lessee acquires possession of the property. The lessee shall return said property at the termination of this lease to the Government in good operating condition, subject to damage beyond fault or control of the lessee.

4. *Plans and specifications.*—It is mutually agreed by both the Government and the lessee that, for and in consideration of the lease, construction, operation, rights, privileges, payments, and other considerations hereinafter mentioned or otherwise provided for in this agreement, that the lessee will construct Dam No. 2, power station, and such other structures now under construction or agreed to be constructed at Muscle Shoals, on the Tennessee River, in the State of Alabama, and hereinafter referred to as the "Property," as are set forth and described more particularly in the maps, plans, specifications, photographs, and other engineering data (hereinafter referred to as the plans), copies of which have been delivered to lessee and duly receipted for by lessee, and such plans thus receipted for are hereby made an essential part of this contract and are as binding on both parties as if they were fully set forth and written herein. When the Government shall require the construction of Dam No. 3, for which there is no complete engineering plans, the lessee agrees and is to build the same on plans and specifications to be prepared by the Government and on a location to be approved by the Government, and the lessee will lease the same under the terms of this contract.

5. *Locks or lifts.*—It is further agreed that the lessee will construct for the Government the locks or lifts for the purpose of maintaining navigation over the dam or dams to be constructed at Muscle Shoals.

6. *Manufacture of nitrates.*—The lessee agrees to operate the nitrate plants, now a part of the property (which have an estimated capacity of 120,000 tons per annum), together with other plants that may hereinafter be built, to manufacture such fertilizer compounds or mixtures and complete fertilizers as approved by the Secretary of Agriculture, and to commence operation of one plant within one year after it acquires possession, and as soon as sufficient power is generated by the hydroelectric plants belonging to the property, it will operate at full capacity all the plants that can be operated from the receipts of the sale of the fertilizer compounds, together with the receipts from one mill per kilowatt-hour, from sale of all power generated in excess of that required to operate the plants.

7. *Alterations of nitrate plants.*—It is also agreed that the lessee will make such alterations, additions, or changes in the nitrate plants as may be required to produce the nitrates or other fertilizer compounds approved by the Secretary of Agriculture, and to be completed within the time required to produce hydroelectric power at Dam No. 2. After the plants have been put in operation under this lease the lessee shall make such additions or changes, from time to time, as may be necessary to produce the required fertilizer or fertilizer compounds approved by the Secretary of Agriculture, and such changes, and the cost of producing complete fertilizers, are to be made as an operating charge from the funds on hand derived from the sale of fertilizer compounds, and the power not required to operate the plants.

8. *Plans of alterations.*—It is agreed that the lessee will furnish the Secretary of War copies of the plans and specifications of the proposed changes to be made in the nitrate plants to fit them to produce the fertilizer compounds approved by the Secretary of Agriculture. Such alterations are to be so designed as to keep the nitrate plant No. 2 in condition to produce explosive compounds with the least delay and expense.

9. *Research.*—The lessee agrees to maintain and operate a research department in cooperation with the Agriculture Department of the Government, for the purpose of developing the processes for the fixation of atmospheric nitrogen, the cost of research work to be charged to operating expenses of the plant.

10. *Construction.*—Lessee agrees to begin construction within 60 days from the time it is given possession of the property and to continue such construction in a diligent, business, and workmanlike manner until all construction work provided for under this contract shall be completed, according to terms hereinafter set forth, within three years from the time of possession, reasonable extension of time to be granted for delays over which the lessee has no control.

11. *Changes.*—It is further agreed that at any time during the construction, if, in the opinion of either party herein, the structures provided for in the plans have become, or are liable to become, weak, dangerous, uncertain, or inefficient they may request changes, extensions, or additions to be made in the plans for the purpose of increasing the strength, stability, duty, endurance, or efficiency of the dams, locks, power stations, or other structures to be built by lessee under provisions of this contract, such changes, extensions, or additions shall be submitted to the engineer representing the other party and to the surety company furnishing the bond of the lessee, and if such changes, extensions, or additions shall be approved by the engineer representing the other party and the surety company they are to become a part of this contract and become as binding on both parties, and the bonds of the lessee, as if originally written herein.

12. *Arbitration.*—It is also provided that, in event a request of either party for changes, extensions, or additions in the plans for any of the purposes set forth in the foregoing paragraph of this contract has been approved by the surety on the bond of the lessee, and has not been approved by the engineer representing the other party, then the questions of endurance or strength or such material or members as can be determined by physical test shall be submitted to the United States Bureau of Standards for final determination, and all questions as to the effect of the proposed changes, extensions, or additions upon the increase of strength, stability, duty, endurance, or efficiency of the dams, locks, power stations, or other structures to be built under this agreement, the plans for the changes as requested shall be submitted to the engineering faculty, or such members thereof who will undertake the work, of one or both of the following-named universities or schools of technology: Massachusetts Institute of Technology, Cambridge, Mass.; Cornell University, Ithaca, N. Y.; and the report of such faculty or faculties, if submitted to more than one, together with the report of the Bureau of Standards, shall be final; and if such report of the Bureau of Standards and faculties of technical schools mentioned herein show that the proposed changes, extensions, or additions will materially increase the strength, stability, duty, endurance, or efficiency of the structures affected by the changes, extensions, or additions, then such changes, extensions, or additions shall become a part of the working plans of this contract, the same as if they were originally written herein or had been approved by the engineers of both parties and the surety bond.

13. *Costs of tests.*—It is also understood and agreed that the cost of testing, consulting, or other expenses caused by the request for changes in the plans as provided for shall be a part of the construction cost provided herein.

14. *Representatives.*—It is understood and agreed that during the time of construction that both parties hereto shall designate an engineer to represent them on the work, and the acts of such engineer shall be binding as to the party designating him as a representative.

15. *Investment.*—It is agreed that the lessee will not be required to invest in the manufacture of nitrates or other fertilizer compounds any money other than that received from the sale of the products of the nitrate plants, plus 1 mill per kilowatt-hour received from the sale of power in excess of that required to operate the plant.

16. *Sale of products.*—It is further agreed that the lessee will sell all fertilizer and fertilizer compounds produced by the plant at prices and on conditions and terms approved by the Secretary of Agriculture.

17. *Additional plants.*—It is further agreed that in event the development of power for use and sale from this plant, together with the receipts from the sale of products, should be insufficient to produce the amount of fertilizer compounds required to supply the demands, the lessee agrees to construct, under the terms of this agreement, other power plants or storage reservoirs, upon sites owned by the Government and selected by the Secretary of War and itself, said plants or storage reservoirs to be constructed and operated under the general terms of this agreement for the purpose of enabling it to provide the fertilizer compounds to meet growing needs.

18. *Profits from nitrates.*—It is also further agreed that when nitrates can be made at a profit or when the cost of the same has been so reduced that the funds arising from the sale of excess power and fertilizer compounds are not needed in whole or in part for financing such productions as herein provided, the said funds shall be paid by the lessee into the Treasury of the United States.

19. *Consideration.*—In consideration of the performance of the foregoing proposals and conditions the Government shall agree to pay to the lessee the cost plus 5 per cent of the completion of Dam No. 2, the initial alterations of nitrate plants No. 1 and No. 2, and the completion of the locks at Dam No. 2, and when required by the Government to build Dam No. 3 and the locks at Dam No. 3 and additional plants and storage reservoirs, on the same terms, in monthly payments, as per estimates of the engineers upon schedules of work performed.

20. *Payments.*—It is agreed herein that the engineer representing the Government will on the first of each month give the lessee an estimate of the work performed and a statement of the amount earned by it during the preceding month.

21. *Stores, stock, and equipment.*—All stores, supplies, equipment, including engineers' supplies, files and instruments, and other loose personal property now on or about the premises, whether or not required for construction purposes, but not including subsistence stores, shall become the property of the lessee upon the execution of this contract.

22. *Compensation.*—It is further agreed that as a part of the compensation for the performance of this contract the lessee will retain the proceeds from the sale of power not required to operate the plant or plants, and locks or lifts, over and above the 1 mill per kilowatt-hour required for financing the production of fertilizer compounds, or to be paid into the United States Treasury as set forth in this agreement.

23. *Power for locks.*—The lessee agrees to furnish to the Government, free of charge, all power required to operate the locks or lifts which are to be operated by the Government.

24. *Emergency provision.*—The lessee agrees to place the property or any part thereof at the disposal of the Government in the event of war or any other public emergency, or to operate the same for the Government to manufacture nitrates, explosives, or munitions of war or for other purposes necessary for the safety of the United States, as the Government may require.

25. *Bond.*—The lessee agrees to protect the Government for the full and faithful performances of the contract by giving a good and sufficient surety bond, to be approved by the Government.

26. *Inspection.*—It is agreed that the Government experts, inspectors, and accountants can, at all reasonable times, examine the books, papers, accounts, meters, and such other accessories of the plant necessary to satisfy them whether or not the lessee is executing this contract in good faith.

27. *Repairs.*—It is also agreed that should the foundation of Dam No. 2 be found defective or show excessive leakage, the Government will pay to the lessee the expense of the necessary repairs, including a reasonable allowance for overhead.

In witness whereof, the United States of America has caused these presents to be executed by the Secretary of War, pursuant to the authority conferred upon him by act of Congress, approved the —— day of ————, 1922, entitled "An act to provide for the lease and completion of Muscle Shoals, and other purposes," and the said Frederick E. Engstrum has set his hand on the day and year first herein above set forth.

UNITED STATES OF AMERICA.
By ———— ————, *Secretary of War.*
FREDERICK E. ENGSTRUM.

The CHAIRMAN. I understand that Senator Butler is here for Mr. Engstrum, and the committee would be very glad to hear any statement that he desires to make regarding this matter.

Mr. BUTLER. Mr. Chairman, Mr. Engstrum is present and I would like for him to appear and make a brief statement before I begin.

The CHAIRMAN. That is perfectly agreeable. I thought, as attorney, you would desire to be heard first.

STATEMENT OF MR. FREDERICK E. ENGSTRUM, WASHINGTON, D. C.

The CHAIRMAN. Mr. Engstrum, the committee will be glad to hear from you what you desire to say regarding the matter of your office. Will you kindly state for the record your name in full, your present address, and occupation?

Mr. ENGSTRUM. Mr. Chairman and members of the committee, to many of you I am a stranger. I am president of the Newport Shipbuilding Corporation. My name is Frederick E. Engstrum. I have been engaged in construction work for the last 25 years following my engineering course at the University of California. I was brought up in California. I engaged with my father in the construction of the then largest beet-sugar factory in the world at Oxnard, and have been engaged in various construction of railroads, canals, concrete fireproof hotels and theaters and office buildings. In 1908 I invented the system of pouring concrete by the gravity system, which is commonly called "shooting concrete," which you have an example of here, fully developed, in the concrete bridge on the Potomac, which is a model plant for the shooting of concrete. My shipbuilding company has just completed some 19 concrete ships for the War Department, used in the Quartermaster's Department—the smaller type, with Diesel engine installation, used on the rivers and harbors, and the oil tankers serving the fuel supply. I have a shipyard in Wilmington, N. C., with a residence there, and my office and business address in Washington is 632 Southern Building.

In offering my proposal for the lease and completion of Muscle Shoals, I have associated with me Senator Butler, whom I would like to present the offer, Mr. Chairman, and I will be very glad at that time to answer any questions or make any changes possible that the committee sees fit, or do whatever I can to meet the desires of the Government in respect to entering into a lease of this kind.

The CHAIRMAN. You want Senator Butler to explain the proposition more in detail?

Mr. ENGSTRUM. If you please, Mr. Chairman.

The CHAIRMAN. We will be very glad to hear from Senator Butler. Senator Butler was formerly a Member of the United States Senate and is well known by reputation, at least, to all of you.

STATEMENT OF HON. MARION BUTLER, ATTORNEY FOR MR. FREDERICK E. ENGSTRUM.

Mr. BUTLER. Mr. Chairman and gentlemen of the committee: This great water power has been a matter of more than ordinary interest to every American citizen who has given any attention to the water powers of this country, their development and their possibilities—even before the passage of the national defense act of June 3, 1916. Indeed, the possibilities at Muscle Shoals had the serious attention of our Government long before that time; under congressional authority the War Department had made extended investigations and borings and official reports to Congress with a view to developing this power, without any regard to the immediate approach of war, for the general public welfare.

The question of producing cheap and sufficient nitrates, I think, was seriously considered at that time, before the shadow of war was upon us, because even then we knew that there was a serious scarcity of nitrates in the world, and especially in this country. The chemical world has been studying the question for years and progress had been made, even at that time, that led to the well-founded hope that there were great possibilities in the fixation of nitrogen from the air when we could develop cheap hydroelectric power.

When war came Congress at once decided to develop this great water power for the immediate needs for the production of nitrates for explosives, and that led to the passage of the national defense act, in which, right in the midst of war, Congress did not lose sight of the resultant peace advantages that would come from making nitrates for fertilizer when the war was over; while Muscle Shoals was not named in the act, yet everybody had it in mind, and it was selected by the President as the best location and the best power to develop to make nitrates needed for explosives in time of war, and for the further declared purpose of using this same development for making nitrates fit for fertilizers in time of peace.

Of course, at that time nitrates for explosives was the overshadowing idea; in the same way to-day, the making of nitrates for fertilizers is the overshadowing purpose for peace time, together with nitrogen preparedness for war for all time in the future.

Now, in the light of that declared purpose of the Government, and in the face of a great need for more nitrogen and cheaper fertilizers, this proposal has been prepared to meet that sentiment and that need. Of course, we prepared it from a purely business standpoint, but in making the proposition it has been

shaped to meet, as we understand it, the declared public purpose and public need; therefore, our proposition is to devote this entire development to the making of nitrates and to developing the art. The hearings before this committee show the interest of the country in the making of more nitrogen and cheaper fertilizers and the development of this art of taking and using this most valuable element from the air, which is unlimited in quantity, for both national defense and the general public welfare in peace. It is, indeed, a great governmental purpose, and the present depression in agriculture has accentuated it, if possible.

The need for fertilizer is keenly felt in every part of the country, probably more keenly to-day than ever before, not only because we are learning more the need and value of fertilizer but also because the parts of our country that had stored up fertilizer values in the soil that nature put there from the beginning are beginning to realize the need of fertilizer. The South has always needed it more than the West, but we are approaching the time, indeed it is here, when every part of this country, in the development of agriculture and its success in feeding and clothing the Nation, will depend upon an adequate supply of fertilizer, cheap enough to enable the farmers to produce cheaply and to enable the consumers to consume at prices that are not prohibitive. So when, we face the proposition of a cheap fertilizer we are facing a basic question that affects the prosperity of agriculture and the cost of living to the great consuming world.

It is wise for us as individuals and also as a Nation occasionally to stop and take our bearings, our prospective as to other individuals and as to the other nations of the world. This great country is behind in the vital matter of giving proper attention to the production of food and clothing. This great country is using less fertilizer material than the small country of Germany, which we could put in one corner of this country and forget it was there. We are starving our soil. We did it from necessity during the war, but we did it before the war and we are again doing it now. Germany used last year 500,000 tons of nitrates for fertilizer. This country, with its enormous acreage, needing such fertilizers more than Germany—hungry for it, calling for it, impotent without it, with over half of the labor and toil of our wealth producers thrown away without this fertilizer to give nature a chance to respond to human efforts—used last year less than 175,000 tons, and at least half of that we imported from Chile.

I submit, Mr. Chairman, that these figures, which are correct, are staggering, and we should not lose any time in correcting this most serious situation.

Now, what is the trouble? To begin with, we are not producing sufficient nitrogen in this country and therefore we are not in a position to furnish ourselves in time of war or in time of peace. Germany produced last year over 300,000 tons of nitrogen from the air by a process they have invented, called the Haber process. That is cheaper and more efficient than the cyanamid process, which she is using to only a limited extent. But Germany can not produce nitrogen from the air by either process as cheaply as we can, because she has no great water powers by which she can develop cheap hydroelectric power. But we have got it to burn and we are burning it—we are not using it.

Talk about conservation, we are the most prodigal sons in the world with water power, because the only way you can conserve water power is to use it. What has gone over the dam an hour ago never will go over it again; it is gone. The trouble is it did not go over a dam, it went down the run or over the rapids; the only way we can conserve it is to use it and use all of it every minute. But we are not conserving our water power and we are most prodigal sons in that respect. We have everything in this country to enable us to outstrip the rest of the world in furnishing ourselves with everything we need, but we are not using it.

Germany produced last year by the cyanamid process 100,000 tons of nitrogen, in addition to the 300,000 tons produced by the Haber process. They are using both processes, but they find the Haber process the most valuable, the cheapest and the most efficient, and they are bending all their energies to developing it still further, and to perfect it. That country does not waste anything, and so, in addition to using these two scientific methods for taking the nitrogen from the air, they have saved every ounce of ammonia or nitrogen from the coke ovens. They saved in that way 100,000 tons last year, and that is the way they got the 500,000 tons—300,000 tons from the air by the Haber process, 100,000 tons from the air by the cyanamid process, and 100,000 tons from the coke ovens.

Now, to-day, gentlemen, we are not producing commercially one pound of nitrogen from the air by either process. We are dependent on what we save from the coke ovens. Every fertilizer factory in this country has to look to coke ovens for the by-product they can get there, and then they have to go to Chile or to some other country which is manufacturing it, in order to get the rest of the nitrates that they use for fertilizer. The result is that it is so dear the fertilizer companies do not use as much nitrogen in fertilizer as they should, and the farmers do not buy half the fertilizer that they know they need.

Now, that brings us, Mr. Chairman, concretely to why Mr. Engstrum's proposal provides for not scrapping Nitrate Plant No. 1 at Muscle Shoals, which is the Haber process. I believe no other offer you have before you proposes to utilize Nitrate Plant No. 1.

The CHAIRMAN. Not for manufacturing nitrates.

Mr. BUTLER. But to scrap it as a nitrate plant and to use it for general manufacturing purposes, for making automobile parts or dolls or something else, but not for making nitrates. We propose to use both nitrate plants for making nitrates.

Now, Mr. Chairman and gentlemen of the committee, if you will pardon me for a moment, I want to say that I am interested in this question more than as counsel. I was born and raised on a farm and have been largely interested in agriculture as a business all my life; I own and am operating one of the largest farms in my State, and therefore I know the situation intimately as a practical farmer. I am a little more than an agriculturist; I am a real farmer. I spend much time on that plantation in person. During the war I devoted my whole time to it; when my boys went to the front to shoot bullets I went down to the farm to make biscuits, and I stayed personally during the war. With my plantation stripped of its best labor I tried to supply its place with farm machinery, but the most serious problem was fertilizers.

This fertilizer proposition I have faced and studied from every angle, and it is the worst handicap I have had to face as a wealth producer; that is, to find a way to buy enough fertilizer to make my machinery and my labor and my land and my own efforts produce the results that should have been produced. I have found it impossible for me to produce what that effort and labor and expense should have produced and would have produced in any other business.

I have mixed my own fertilizers; I was forced to do it; and every farmer should do it until he can buy them compounded cheaper, because we pay too much for the mixing. So I have dealt with the fertilizer ingredients and have searched the world to try to get them cheap and then mix them myself; I mix different combinations to suit each field and each crop, not only from an analysis of the soil but also from experience, which has proved to be a better guide than soil analysis. Therefore, gentlemen of the committee, this question, that you are considering, would appeal to me just as strongly if I were not counsel in this case, but simply as a citizen; and I trust you will pardon me for thus qualifying myself from experience to testify in this matter as an expert.

I have watched and followed the proposed development of Muscle Shoals from the very beginning; I have read and kept up with every report and everything you have done, never with any idea at that time of appearing here as counsel about it, but as an American citizen deeply interested in the production of a sufficient supply of nitrogen to meet the serious question of nitrogen preparedness for both war and peace. I am as much delighted to-day, as any American citizen can be, at this interest your committee is now showing in this matter. No one was more disappointed than myself when Congress failed to make the appropriation after the war to continue the development of this project. It now looks as if we were going to do it and it is a glad message of cheer to all of the American people, not only to the farmers but to all of the consumers, for it means much to them.

Now, Nitrate Plant No. 1 is the only plant in this country, outside of the one small plant that has been built at Syracuse since the war, that is built to use the Haber process; and, to me, it is a shocking proposition to abandon the use and development of that process at Muscle Shoals, and to go back to simply running the cyanamid plant there, which is more expensive and which has not the same future posibilites of development. It is not possible to meet our needs for nitrogen by the cyanamid process alone, and when I say that I think I am speaking from the composite wisdom of the scientists and the experts who have studied the question of the fixation of nitrogen from the air, because that process is more expensive and has not the possibilities in it for development that the Haber process has. They all expect the progress to be made in improving the methods for the fixation of atmospheric nitrogen to be along the lines of the Haber process; and, if that is true, then we should not scrap Nitrate Plant No. 1, which is the Haber process.

It is true that during war times and without full knowledge of what the Haber process was we did not make a success of Nitrate Plant No. 1. I do not criticize anybody. I think it was done the best that could have been done at the time—with the information we had—but we know to-day that we can redesign that plant and run it perfectly by the Haber process. The one serious defect in that plant is the need of an efficient catalyst, which is essential in forcing the nitrogen and the hydrogen to join to make ammonia. The Germans keep the composition of their catalyst a secret, but we have succeeded since the war in making a catalyst which is better than the one used by the Germans. Therefore, we can to-day make Nitrate Plant No. 1 a better plant than anyone in Germany—as far as we know; and we can do it at a cost that will be so good an investment that we can not afford to fail to do it. The highest estimate, I think, which General Williams, Chief of the Ordnance Department, gave was $4,000,000 to make Nitrate Plant No. 1 a successful plant by the Haber process. An investment of $4,000,000, therefore, will make that plant a successful going concern. We should not scrap what is there, but we should use it—when we scrap things we are throwing them away.

Under the Engstrum proposal you will conserve the value of that plant by redesigning it so as to do economically what we know can be done with it. This plant has already cost $13,000,000, and there is no other way that Congress can spend $4,000,000 to develop this art that will be worth as much to the country, both in times of peace and in times of war, as by redesigning that plant and making it a going concern.

I appeal to you as a citizen, rather as an attorney, not to scrap that plant, but to redesign it and put it to work making nitrogen. The War Department and the Agricultural Department know how to do it. General Williams and Major Burns, who is the nitrate expert of the War Department, told you on the stand that they had already worked out plans and they knew exactly how to do it. Doctor Tolman, the nitrate expert of the Agricultural Department, told you that we know now how to make nitrate plant No. 1 the best and most efficient Haber process plant in the world. Therefore, by spending $4,000.000 more on that plant we have a plant, which will be taking more nitrogen from the air at less cost than any other plant in existence.

Now, if this water power is going to be used for the great purposes declared in the national defense act, then we should not scrap anything we have there, but we should run both nitrate plants and, as we develop the power further, we should build more nitrate plants. That is exactly the vision that we had, Mr. Chairman, when we prepared this proposal.

Mr. Engstrum's proposal does not require the building of Dam No. 3 at this time, but it does provide for doing it later. We all know that a succession of dams and reservoirs can and will be built up that river. There is no public need for Dam No. 3 at the present time, but under our proposal we stand in readiness any minute that the Government decides, as a matter of policy to proceed with it, to build it under our contract. The Government should use the same ordinary common sense that you and I use in our own business or that we would use in this matter if this was our water power and we were spending our money. We would take what we have there now and use it to the best advantage to develop this art to make cheap nitrates; we would redesign the two plants there to meet present needs, and we would not spend, probably, any more money in building any more dams after finishing Dam No. 2 until there was need for more power and until we had developed the art a little further and learned to make nitrogen cheaper. Everybody expects some morning to wake up and find that, if we have not learned it ourselves, somebody else has discovered some cheaper method or some better process. The whole world is seeking for it, and we are sure soon to find a cheaper method; it will come.

Then we should not scrap, but we should conserve what we have and use it, and also run a research plant there in connection with these two nitrate plants, until either we or somebody else discovers how we can make the nitrates for fertilizers cheaper; then we should build Dam No. 3 at once and at the same

time put in additional nitrate plants and do it at once, and as fast as necessary utilize all of that tremendous water power in making cheap nitrates for cheap fertilizers. When that time comes, we will build the extra dams—Dam No. 3, No. 4, No. 5, and No. 6, and storage dams—way up to the headwaters of that river. This is what our proposal contemplates, and further to use all this development in producing cheaper nitrates.

In this connection, I wish to point to the fact that the Haber process as now operated in a small way at Syracuse, and as designed during the war to be used at Muscle Shoals, did not contemplate producing a nitrate suitable for fertilizer but a nitrate for explosives, and, therefore, if we had finished plant No. 1 and had operated it successfully, it would now be necessary to make certain changes or additions in order to make the nitrates needed for fertilizers. It is perfectly simple and easy to make the necessary changes to produce a nitrate fit for fertilizers. We know now how to make a soluble nitrate that is fit for fertilizers at both of these plants by redesigning them, and that can be done within the cost I have given you.

Indeed, Mr. Chairman, we have learned a number of things we did not know when we built those two plants. For instance, we get our hydrogen in nitrate plant No. 1 by passing water over heated coke; the oxygen is absorbed out of the water and that leaves the hydrogen. That is a well-known process now used in Germany and also used at Syracuse and that part of it was successful down there during the war; and, in redesigning the plant, we probably would leave that part of the process in for the present; but it is not as successful as another process that we have improved since the war for getting the hydrogen out of the water. But this improved process I am speaking of is one you can not use economically unless you have cheap hydroelectric power, and therefore in redesigning that plant we would keep the coke and water method for the present, because we would use the steam plant until Dam No. 2 is completed. I do not know whether it has been brought out before the committee or not, but there is a complete steam plant not only at plant No. 2 but at plant No. 1, standing there ready to operate now. As soon as plant No. 1 can be redesigned with the new catalyst, we can start it up with that steam plant and begin to produce agricultural fertilizers before we can get the dam completed for making hydroelectric power; but the minute we have got the hydroelectric power, it would be economical and desirable to still modify plant No. 1 by putting in an electric process by which you can separate the hydrogen from the water without passing it over heated coke. Our Government has built the longest and most efficient electrolytic cell known since the war for this very purpose.

But it requires a good deal of electric power, and when we have cheap power it is done better by electricity than it can be done by the other process. When the electrolytic cell is put in, then we can use the liquid air method for taking the nitrogen from the air, which is cheaper than the method used by Germany and also being used at Syracuse, N. Y. I am simply mentioning that to show the progress the art is making. Even to-day in redesigning that plant to run by steam power we would not change it as much as we will when we finish the dam, in order to get the best results; but when the dams are finished, we can have a perfect plant operated according to the latest methods of getting the hydrogen out of the water and the nitrogen out of the air, which methods we can not use with a steam plant. So all of these things can be done by the time Dam No. 2 is finished.

Now, when we come to plant No. 2, it is a simple matter to redesign that plant. The process for making a nitrate for explosives and a nitrate for fertilizer is exactly the same under the cyanamid process down to the last step you take.

When you get to that step, if you want to make a nitrate for explosives, you treat it with nitric acid, and if you want to make that nitrate for fertilizers, you treat it with sulphuric acid, which is cheaper than the other method, so that you can produce the sulphate of ammonia cheaper.

That is the only difference, therefore we would have at nitrate plant No. 2, by simply adding the sulphuric acid equipment, a plant ready to make both kinds of nitrates at all times, and at the highest estimate, as given here, I think, by both General Williams and Major Burns, of $3,000,000.

So with these two plants redesigned we would be in the position where we would be producing this nitrate for fertilizer, ready at any minute to make a nitrate for explosives, by two thethods. Then by operating a research plant for the development of the Haber process we are in the best possible position, Mr. Chairman and gentlemen, to have a chance to go over the top before any

other country, in discovering a still better and a cheaper method, because the best way to learn to walk is by walking, and the best way to develop this art is by doing it and working upon it.

We have learned someth'ng in every war we have been in, and then we go back and rust and do not learn anything more until an emergency forces us to do something. It is time we were learning to be progressing all the time and not when dire necessity or a gun is in our faces. This young Jonathan has been so intoxicated with the wealth of his continent, wh'ch nature stored up here for us during all these years since creation, that we have spent it and wasted it—been like a drunken sailor; nationally, we have not thought except when we were pinched; we are getting old enough to quit that and begin to think, conserve, and develop every hour in peace as in war, as all high-class nations must do if they are going to keep up in the world procession. If we had not been of that go-lucky temperament we would not have been caught in the last war where we could not get enough nitrates even for explosives; we found our supply from Chile in danger any minute of being cut off; we did not have enough for explosives, and none for agriculture. I was forced to make two crops without nitrogen and exhausted my soil so that I now need more than I have ever needed before. Now, that was the bullet and the biscuit fix we were caught in, and that is the reason we ought to develop this art.

In drawing up this proposal, Mr. Chairman, we knew that no one could to-day produce these nitrates for fertilizers and make a profit by any known process to-day, but we all expect it can be done very soon. The art is just in its infancy. We know how to make these nitrates and we are going to learn how to make them at a profit, but we do not know that yet. Now, how are you going to begin making on a commercial basis nitrates for fertilizers if you can not make them cheaper to-day than you can get Chilean n'trates or buy them elsewhere? Are we to sit down and wait and do nothing and let the rest of the world discover that for us and then probably have to buy the secret from them or find it out by accident?

It was to meet this situation that we have tried to work out a plan by which we could begin at once producing these nitrates at both plants by both methods, and continue to produce without asking the Government for a subsidy. The only way the Government could do it would be by a subsidy, just like we will have to vote a subsidy for our merchant marine. Congress ought to subsidize the making of these nitrates if we can not make them in any other way; cheap fertilizer is even more important than a merchant marine. Now, instead of Congress being called upon constantly to subsidize the making of these nitrates until we learn how to make them cheaper, we have worked out a plan embodied in this proposal by which we will make the water power finance the making of these nitrates from the beginning no matter what the cost may be. You heard the statements about the cost of making nitrogen from the air in the form of ammonium sulphate, which was placed all the way from $48 to $90 a ton. Now, regardless of what that cost may be, we ought to begin making them by both processes at once; therefore we propose that we use a part of this power for running these plants and then we sell a part of it at wholesale, and use part of the profits to subsidize the making of nitrates, even at a loss. In this way the plant will finance itself.

There is a market to-day for a certain amount of power. I think the statements have been made to you that there is probably a market to-day for more than 100,000 horsepower without having to look for it or to create industries to use it, and that is probably about correct. The demand for this power will grow. We have learned that wherever we have started any hydroelectric development.

But there is a market to-day for this power; we can wholesale it to other companies that are in the power business—that is, wholesale enough of it so that we can take a certain part of the profits from its sale and finance the making of these nitrates; and, as we say in the proposal, the limitation to the amount of nitrates that we will make will depend upon how much money we can raise from the sale of power and the price at which we sell the nitrates to the farmers, as fixed by the Secretary of Agriculture. We feel that the nitrates produced at Muscle Shoals should be sold to the farmers at a price to be approved by the Secretary of Agriculture.

The very purpose of developing this water power and the governmental purpose as declared in the national defense act would justify the Government in

regulating the price at which it should be sold. Besides, it is Government money that goes into the building of these dams and the purpose is to help the public and promote the success of agriculture; you do not want the products produced by this water power held at a price that is entirely for private profit.

If the Muscle Shoals project is to be used to benefit agriculture, then the nitrates produced there must be sold at a price below the present selling price of Chilean nitrates. Now, since we can not, until the processes for the fixation of atmospheric nitrogen are improved, make nitrates at a cost less than the present selling price of Chilean nitrates, it is necessary to subsidize the making of nitrates by the sale of a part of the power developed, as I have already explained. But possibly I can make that plainer by stating it in another way: We propose to use as much of the power developed at Dam No. 2 as may be necessary to run both nitrate plants; then we propose to sell the remainder of the power to other power companies or to the public, but at wholesale; we propose to set aside 1 mill for each kilowatt-hour of power sold, to be paid into the Treasury of the United States as rental for the lease of the property. Now, if the Secretary of Agriculture should think that the nitrates made at Muscle Shoals should be sold to the farmers at $10 a ton less than it may cost to produce them, in order to furnish nitrates at a price below the selling price of Chilean nitrates, then this loss of $10 a ton is to be taken out of the sum arising from the 1 mill per kilowatt-hour of the power sold before that sum is paid into the Treasury of the United States. It is only by this kind of a subsidy that nitrates can now be made from the air and sold at a price less than Chilean nitrates.

But everybody expects that improvements will soon be made in the Haber process by which we can make nitrates cheaper than the present selling price of Chilean nitrates. When that time comes, we then agree to pay all of the 1 mill per kilowatt hour of the power sold into the United States Treasury. Our profits will come entirely from what we may be able to sell this power for above the 1 mill per kilowatt-hour, all of which goes to the Government. We do not propose to ever make any profit from the manufacture and sale of nitrates and fertilizers. Under an estimated development of 440,000 kilowatts the 1 mill per kilowatt-hour will produce $3,500,000 a year, and every dollar of that will under our lease go either into the United States Treasury or be used in financing the making and selling of cheap nitrates and fertilizers, at the option of the Government. This is certainly a handsome income to the Goverment on the investment, and the benefits to agriculture and to the consumers will be manyfold greater.

When Dam No. 3 is built and another nitrate plant is in operation there, then the income to the Government and the benefit to the farmers and to the public will be proportionately increased, and so on with all the other developments on that river during the 50 years of this lease. This is what our proposal means.

We also want the Secretary of Agriculture to regulate the amount of nitrates to be offered for sale and also the amount of commercial fertilizers. The three elements necessary in fertilizers are the nitrogen, the potash, and the phosphoric acid. Now, we can sell the nitrogen alone direct to the farmers, or we can also sell them all of the ingredients separate, or we can put them together in the proper proportions and sell them as a complete commercial fertilizer; but it is best that that work shall be done under regulations made by the Secretary of Agriculture. Why? I hope to see the time come—and even now many of the farmers are doing it—when the farmers will buy all their ingredients unmixed and mix them themselves, and they will all come to it soon. Therefore a complete fertilizer is not the ideal thing. But there should be some of the complete fertilizers prepared and ready to sell and to be used by farmers who have not yet learned to mix their own fertilizers.

Then, too, there are people who would be glad to buy cheap nitrates from us and then compound a complete commercial fertilizer, cheap enough to sell it to the farmers as cheap as we could compound it. If that can be done by private enterprise, then there is no need for us to do it, for we could then devote all of our energies to making cheap nitrates. So it seems to me that we should be permitted, under regulations formulated by the Secretary of Agriculture, to either sell these nitrates to fertilizer factories or direct to the farmers. In other words, in that part of our proposal we have provided for doing what seemed to us to be the best thing. This, however, is a detail, but I wanted you to get the idea of how we had this thing worked out on that basis.

Now, Mr. Chairman, I feel like apologizing for taking this much of your time and for saying as much as I have said to a committee which has heard so much about this question from every angle, but our proposition is entirely different in scope and purpose from the others before you.

I have set it forth in this proposal as plainly and as simply as we could write it, without having our attention called to anything that might seem to be obscure. So I would rather explain, in answer to any questions, what may appear to be obscure.

While I think I have explained all of the vital points contained in this proposal, yet I will ask your attention to paragraphs 11 and 12.

You may be curious to know why we put them in and why they are so worded. It is done out of an abundance of caution from the standpoint of prudent business men and experienced engineers. We do not want to be connected with anything that would be a failure. Governments often waste money because there is not any chance to stop and think while the work is being done and the money is going out.

We are asking for a lease for 50 years. We expect to operate this property successfully for 50 years, and we do not want any construction on this project that is not going to last 50 years and more. We do not want to be a party to the money being spent and not get the best results; besides, faulty construction will seriously affect the value of our lease, if not destroy it. This is true not only as to the building of the dams and the reservoirs but also as to the remodeling of the nitrate plants and the construction of new nitrate plants. We want the closest inspection both by the Government engineers and by our engineers or inspectors, so that if there should be a difference of opinion we could stop, before another dollar is spent, and have the highest authorities pass upon the work. We consider that as important to us as if we were spending our own money. This matter of the best possible construction is so important that we have already arranged for the services of one of the greatest engineers in this country to take charge of supervising and directing this construction if we shall be awarded this lease.

In drafting section 17 we looked ahead to the time when more dams and more power will be needed to make more nitrates and more fertilizers.

In drafting section 18 we again looked ahead. Our idea is in the beginning to finance the making of the nitrates and to use every dollar of the 1 mill per kilowatt-hour from the sale of power, if necessary, in making nitrates even at a loss. It will not be long, however, before we will be making those nitrates at cost or a profit. When that time comes every dollar which has gone into financing the making of nitrates will go into the Treasury. So we are offering to the Government a handsome return for the investment, which goes either into the financing of the production of nitrates, or, when it is not needed for that, which goes into the United States Treasury. Therefore it becomes a trust fund, which goes sacredly to one purpose or the other.

Now, a word in regard to section 19; after this proposal was printed it occurred to us that further words might have been put into or added to that section in order to clarify the meaning as to how the cost of construction is to be determined. The word "cost" with a percentage to be paid thereon, it has occurred to us might be construed to mean cost such as we had unfortunate experiences about during the World War. We have fresh in mind the fact that if a percentage is to be paid on costs, human nature often does not limit the cost, but the tendency is to make the cost run higher than it ought to. We had in mind, when we wrote that section, that the cost would be a matter to be determined by the lowest bid and to be approved by the Government. So we have prepared this amendment, which we wish to go into the record and which we want to be considered as a part of section 19. The amendment reads as follows: "The cost in each case to be determined by the lowest responsible bid resulting from a public offer by lessee, and by the contract awarded by lessee to such bidder, subject to approval by the Secretary of War."

This makes it perfectly clear and certain that the work will be done at the lowest possible cost; and it will also be done in the most efficient manner, because, as I have said, we will have there in charge one of the best engineers in the country to-day. Our idea has been always that we would submit all the

construction work to public bidding, because we can in this way get responsible contractors with their complete equipment and in the business, who can unquestionably do this construction work cheaper than we could by forming an organization to do it, or cheaper than the Government can do it, because they are engaged in that kind of work all the time.

There are responsible concerns for doing such work, who go from one job to another, and their organizations are at the highest state of efficiency and equipment all the time. So we would have all that work done by contract and let it out to the lowest bidder, always, of course, subject to the approval of the Secretary of War. That is the way it would be done, even if there was no language of this kind added to section 19.

In reading over this proposal many times I did not see any other changes or additions that I could suggest to clarify it, because the language is very plain and direct; but, of course, a person who writes a thing may not see its defects, because you have in mind when you write it what you mean, and you may fail to express it in words; so that is the only change or addition I could see that was necessary to clarify its meaning.

Now, Mr. Chairman, I think it would conserve time, if it is the pleasure of the committee, for me to answer questions that may occur to any members of the committee.

The CHAIRMAN. Senator, as I caught the reading of your proposition, the Government puts up the money?

Mr. BUTLER. Yes; the amount necessary to finish Dam No. 2 and to make the initial changes necessary in nitrate plants No. 1 and No. 2.

The CHAIRMAN. For the various things that are to be done, and Mr. Engstrum is to be the contractor to carry out those things.

Mr. BUTLER. Yes; and also to operate the plant as lessee. As such lessee, under his bond, he will superintend the completion of Dam No. 2 and the redesigning of both nitrate plants and then put it into practical operation under a 50-year lease. I want to say that the matter of completing these jobs is secondary to us. We are willing for the Government to do that, and then lease us the completed plant; but somebody has to finish Dam No. 2 and redesign these nitrate plants before you can ever use them.

The part of it that we are interested in primarily, and that appeals most to me, and, I think, to the public, is the operation of this property as provided in the national defense act. We have made what we think is a fair and just business offer to the Government for this incidental, initial stage of necessary work to get ready to do business. The lease under our proposal covers the whole business, and if it is given to us in that shape we will put the property in operating condition and then operate it. We are not buying anything; we are not taking the Government's title. We are simply offering to carry out, as we see it, the declared governmental purpose in connection with this property, and then to turn it back at the end of 50 years if the lease is not renewed, in as good condition, or in better condition than we get it, because under our bond it must be in good operating condition at the end of 50 years.

Mr. MCKENZIE. The idea of your proposition is that the Government shall carry out these various projects that were contemplated, with the lessee getting a finished plant, and it will do certain things.

Mr. BUTLER. As we understand it, the Government now intends to carry out the purposes of the national defense act, but the purpose of the Government now seeming to be, instead of doing it as a Government project, as was started in time of war, to do it through a contract in peace times, with some individual or corporation. So we offer now to carry out for the Government that purpose declared in the national defense act.

Mr. MCKENZIE. I see your position on that very clearly.

Mr. BUTLER. We offer, if the contract is awarded to us, to go ahead on a business basis to carry out that purpose. The necessary first step is to complete the project and next to operate it—we offer to do either or both. The lease and operation of the property is the important thing but the necessary construction work to get it ready to operate must be done by some one.

Mr. MCKENZIE. Senator, you are here representing Mr. Engstrum, who, by the way, is representing a corporation to be hereafter formed, but which is not now in being, and which under you plan will become the lessee of the Government for the purpose of carrying out the conditions set forth in the contract?

Mr. BUTLER. Yes.

Mr. MCKENZIE. Now, Senator, I think it would be very beneficial for us and help us out very much if you would give us a brief analysis of just exactly what you expect to give to the Government and what you expect to get in return, and then we can ask you some questions about that. You can tell us what you expect to give to the Government as a consideration, and then what you expect in return. I think we can, perhaps, get along better in that way.

Mr. BUTLER. We tried, primarily, I will say, to figure out a proposition on a different basis, to agree to finish this unfinished work for a fixed sum, so as not to have any question of the amount of the cost to the Government; but we found great difficulty in offering you such a lump-sum proposition, as we could look you in the face and say it was absolutely fair, that it was as low a figure as we could do it for and make a living profit, and feel that we were safe, under a bond, and not go into bankruptcy. There was a wide diversity of opinions between our own engineers and the Government engineers as to what it would cost to do the necessary construction work. We do not want, and we felt confident that the Government did not want, any cheap work done on this great project. This is a great proposition and the work should be as durable, if possible, as the eternal rocks on each side of the stream.

Every time we put on paper a fixed amount that we felt would be safe for our bondsmen and for ourselves, we had to put the figure, in order to be safe, higher than we believed it would cost, because if we did not do that we might go broke. And finally, as a matter of good conscience and a matter of good business, we came around to this proposition, as stated in section 19, to put it as a cost proposition.

Now, as to the advantages to the Government: Well, broadly speaking, this proposal will give the Government exactly what it has declared it wants. The only question is, are we offering to do it on a fair business basis and on the best basis on which a responsible individual can do it. That is the point, and that is where, finally, the question is directed as to what we are offering to the Government and what we are expecting to get out of it ourselves.

First, we propose to finish Dam No. 2 and to redesign both nitrate plants in a way which will guarantee the best possible construction, and at a cost which we believe will be less than the Government can do it. We will be lucky if we make any profit on that.

Next, we propose to lease the whole property and to devote it entirely to the making of nitrates; and we all know that when you have devoted the whole thing to that one object you will produce more nitrates and get greater progress in the art of the fixation of atmospheric nitrogen than if you divided up the proposition and leave the making of nitrates as a minor consideration. We will devote the whole Muscle Shoals project to this one purpose. We will operate both of those nitrate plants. There is a steam plant at nitrate plant No. 1, and also a steam plant at nitrate plant No. 2. We would have also the Warrior steam plant, which we propose to lease along with this property. The Government has them there, all built for this purpose. We would begin to operate at once with that power. When we get Dam No. 2 finished we figure to keep the steam plants in a standby condition to increase the amount of primary power when necessary. Say that we produce 100,000 kilowatts of primary power, we could add another 100,000 primary power by operating those steam plants for 10 or 15 per cent of the year, during the low-water period. But we can, of course, run these steam plants for a longer period, or all the time, if necessary. That would make a peak load all the time, if we did that, of 440,000 kilowatts.

Now, we would do that if there was a market for it and we could sell it.

We propose to sell power, as much as we can make to sell, above what is required to run the two nitrate plants, and it is to our interest to sell all we can at a profit, and to devote one mill per kilowatt hour of the power sold to financing the production of these nitrates, because we are going to begin at a loss; everybody knows that. We set that aside as a trust fund, to be given as rental for the lease, in addition to the power that is necessary to run the two plants. Then we agree to sell the products that we produce and add to that fund, it being a fund which belongs to the Government to go into the Treasury, or into the financing of nitrates. We figured with the one mill per kilowatt hour on the power sold, based on a development of 440,000 kilowatts at Dam No. 2, that the income to the Government will be, in round numbers, $3,500,000 a year during the whole length of the lease from Dam No. 2 alone;

and it either goes in cash into the Treasury, or it goes into the production of nitrates. That much is certain. We are giving the Government the certain end of the proposition.

Our proposal also provides that when there is a need for more power and more nitrates that we will build Dam No. 3 and put a nitrate plant there also. Thus the return to the Government and the benefits to the farmers will be increased in proportion to the increased power developed there; and so on until all the water power is developed.

The next part of the question is, What are we going to get out of it? It depends on the amount of power we are able to sell and the price we can get for it. We reserve whatever we get for that power above 1 mill per kilowatt hour for our compensation, and that is the only compensation we get. I say to you frankly that it is a proposition on which we were taking the chances, and on which we were giving the certain end to the Government. That is about as definitely as I can answer your question. Does that answer your question?

Mr. McKENZIE. In a way it does. You have answered it in a way, but not entirely to my satisfaction. I want to say, Senator, that your statement on the general proposition, in my judgment, was a splendid, enlightening statement. That is a matter we are all interested in, generally. But what we are interested in at the moment is the proposed contract or offer by Mr. Engstrum.

Mr. BUTLER. That is why I stopped talking; I knew you were interested in the details of this proposal.

Mr. McKENZIE. You have come to this committee empty handed, to begin with—without a dollar?

Mr. BUTLER. Yes; so far as putting our money into completing this project.

Mr. McKENZIE. The first proposition is that hereafter there will be a corporation formed?

Mr. BUTLER. Yes.

Mr. McKENZIE. Will that corporation own stock?

Mr. BUTLER. I will tell you frankly what we have in mind. We will form a corporation, but we have not yet agreed on any amount of capitalization, because we are giving a bond, and we did not think it was necessary to guarantee a large paid-up capital.

Mr. McKENZIE. You have not thought of the amount of capital stock?

Mr. BUTLER. We have considered that entirely immaterial since we are giving a bond. But if it is desirable, if it cuts any figure, we are ready to meet any suggestions the committee may make along that line. But it never occurred to me that it would be considered essential, if you thought you were dealing with responsible people, as individuals, regardless of how much wealth we might have. But we are ready to give any bond which may be required—with a sufficient bond the personnel of the company is, of course, important to insure the greatest results—that will produce the greatest good. I want to say in this connection that I have given that matter a great deal of consideration, because I will be one of the directors of that company myself. This subject has gripped me so that I have decided to stay with this company as a director and as general counsel; I do not know of anything that has ever appealed to me so much; and, if you give us this contract, the rest of my life will be devoted to developing this proposition. I shall devote my best efforts to developing this great water power in a way to be a credit to this administration and to the Government, and to producing the most beneficent results for agriculture and the public good—I intend to devote my whole life and time to it.

Mr. McKENZIE. My question was not prompted by any idea that I had any fear that the Government might lose out. But it was in connection with my question as to what you expect to get out of this contract.

Mr. BUTLER. The organization of the company is purely a question of business. Of course, Mr. Engstrum or I could seek this contract as an individual and go ahead and do it, but we all know from business experience that it is much more desirable to form a corporation to carry out such a program for a term of 50 years. We expect to bring men into the company who will be worth something not only for their means but also because of their experience and standing, selected with the same care, almost, as you would select an engineer of the greatest ability and reputation. And, of course, we expect to make money operating this plant.

Mr. McKENZIE. Let me put it in another way. As I have said, you come to us empty-handed, not proposing to finance any proposition. You form a corporation to become a lessee of the Government, and then as lessee you proceed to

do certain construction work for the Government to carry out the purposes of the Government, the Government furnishing all the money, the company getting a fee as compensation for the construction of those various plants necessary to complete the project.

Mr. BUTLER. We are willing to accept a contract from the Government to-day to finish the work on a fair basis, and then lease it when it is finished. The construction part, however, is incidental.

Mr. McKENZIE. As the proposition stands, that is the first thing?

Mr. BUTLER. Yes; because it is the first thing to be done. Somebody had it to do, and as I understood it, the Government was looking for somebody to take the whole thing off its hands, both the construction and the operation of the whole project.

Mr. McKENZIE. That would be your first consideration, the first part of your performance?

Mr. BUTLER. Yes; the first part is to make the plant a going concern.

Mr. McKENZIE. You would put up the structures?

Mr. BUTLER. Yes.

Mr. McKENZIE. And the Government would pay you 5 per cent in addition to the cost; that would be the consideration?

Mr. BUTLER. Yes.

Mr. McKENZIE. Now, you start to operate the plant. Do you pay the expenses of operation?

Mr. BUTLER. We pay the expense, as operating expense, out of the proceeds from the plant.

Mr. McKENZIE. Where do you get the proceeds?

Mr. BUTLER. We propose to begin the sale of some power at once, and we propose to begin to operate those nitrate plants, or one of them, very soon. We have the steam power, and as soon as we can redesign this plant we will be making nitrates. We will be able to sell steam power, no doubt, because the Government is selling it now. We will be a going concern long before Dam No. 2 is finished.

Mr. McKENZIE. You have stated you could not manufacture that at the steam plant without being compelled to sell it at a loss?

Mr. BUTLER. We hope to be able to sell enough power from these plants while we are redesigning the nitrate plants to help out our operating expenses; we would utilize everything possible while we are redesigning those plants. We will make up the remainder of the operating expenses from our own funds.

Mr. McKENZIE. You can probably see the purpose of my question about the corporation and your capital stock. If you organize without capital stock or without funds, you would not probably operate very long, if you were compelled to sell this product at a loss.

Mr. BUTLER. We have, of course, foreseen all of that and have our arrangements made, so that we will not be living from hand to mouth each day until we have a live, going concern that will be making a profit for us and also for the Government.

Mr. McKENZIE. Let us go a step further. The dam is completed——

Mr. BUTLER (interposing). Of course, we all know that we must have the requisite amount of capital to do anything.

Mr. McKENZIE. You get the dam completed, and the use of the waterpower, and then you take a certain portion of that power, as I understand it, and utilize it in the operation of these plants?

Mr. BUTLER. Yes.

Mr. McKENZIE. What do you do with the balance?

Mr. BUTLER. We sell it; we will wholesale it.

Mr. McKENZIE. Now then, out of those sales you get a certain income?

Mr. BUTLER. Yes. We get all above 1 mill per kilowatt hour for all power sold.

Mr. McKENZIE. What is your purpose regarding the use of that income, disposing of the income?

Mr. BUTLER. The first thing we do is to set aside the rental which we will pay the Government; that is made up of 1 mill per kilowatt hour, no matter at what price we sell. If we only sell the power for 1 mill per kilowatt hour, it all goes to the Government. That much goes to the Government certainly, whether we get any more or not; and that sum goes into the Treasury or is used for financing the making of nitrates; that is a certain, definite, continuous rental, to be increased as the sale of power is increased. Our profits are, in a way, speculative; we get for our own use all that we may be able

to sell power for above the 1 mill per kilowatt hour. We have tried to base it on a live and let live proposition, giving the Government the certain end of it; our end being speculative, more or less.

Mr. McKENZIE. What would be the proportion of the income that would go to the corporation?

Mr. BUTLER. That would depend entirely at what we could sell the power for.

Mr. McKENZIE. You intend to sell the power immediately in order to get a working fund, as I understand it?

Mr. BUTLER. Yes; what is not needed for the plant.

Mr. McKENZIE. After you have the two plants in operation, about what would be the proportion that would go to your company? I understand you can not state that exactly.

Mr. BUTLER. It will take only about 100,000 horsepower, or less, to run both nitrate plants. We can produce about 650,000 horsepower, or about 440,000 kilowatts, by running the steam plants also. But we would not run the steam plants to supplement the water power unless we could do it at a profit; but we expect to be able to produce at least 200,000 horsepower continuously by running the steam plants only about 15 per cent of the time, and we ought to be able to make more power than that at a profit. We may not be able to do it; but we expect, as time goes on and as the country down there develops, that our profits will be larger than they will be to begin with, figuring the demand for power and the price for power. Of course, the price of coal has a lot to do with it.

We all know that this property, when we have run it for you for 50 years, is going to be worth many times more than when it starts. We expect the time to come when we can build more dams and nitrate plants, all these storage dams, and largely increase the output. These things are not justified to-day because we can not now make money by doing it. So the time will come when the returns to us and to the Government will be much increased.

Mr. McKINZIE. You would expect at once to enter into competition with the Alabama Power Co. in the sale of current, would you not?

Mr. BUTLER. We have no idea, unless forced to do it, to go into the commercial sale of power by retail. We hope to be able to, and we think we can, sell at wholesale to all the power companies around us. All we have to do is to tie in with them, and they will, no doubt, want to do that. We know enough about the business, about the people in the surrounding country, and about their demands to know that we can not produce cheap power there without it being to the interest of the power companies to buy and distribute it around to the cotton mills and factories who want it. The Alabama Power Co. has shown you that they want to-day about 100,000 of this horsepower; that they have a market for it, as I understand the testimony. I think we would have customers right there for all of it, if we would let them have it all. I think every power company around us will want to tie in with us, and I think they would build connecting lines to get some of it. We believe that we will be able to dispose of all of that power to advantage, and it would be an increasing amount. It will not be 10 years, or probably 5 years, before the Government itself, without our urging it, would want us to build Dam No. 3, and then after that other dams, and then storage dams. All of that is going to come to pass.

Mr. McKENZIE. You, in your opening statement, drew us a beautiful picture of the growth and development of the industry, of the manufacture of fertilizer, and said that in time possibly all the power produced there could be utilized in that way?

Mr. BUTLER. Yes.

Mr. McKENZIE. When that day comes, where will you get your profits?

Mr. BUTLER. We agree to furnish the power necessary to serve both nitrate plants from the power to be developed at Dam No. 2, and to sell the remainder, giving the Government 1 mill per kilowatt hour on all power sold and keep the remainder for our profits. When more dams are built and more nitrate plants are erected by them then we must have the proportion between the power produced and the capacity of the nitrate plants the same, or there would have to be a new adjustment as to our profits. Of course, we will always be forced to sell a certain amount of power or there will be no profits. We can never use it all in making nitrates without changing the contract.

Mr. McKENZIE. Then I misunderstood you as to your plan. Your plan, as you have it in your mind is that you will furnish sufficient power to operate these two plants at Muscle Shoals, and whatever surplus there is you want to sell.

Mr. BUTLER. Yes.

Mr. McKENZIE. I got the idea that it was your hope at least that while this is a matter of experiment, up to this stage, that the Government will go on experimenting and as this develops that in time all this vast power at Muscle Shoals could be utilized in the production of fertilizers for the farmers of this country. I got that idea from your statement.

Mr. BUTLER. What I intended to say is that we devote all the power necessary from Dam No. 2 to the making of nitrates at these two plants and sell the remainder of the power to finance the operation, 1 mill of each kilowatt hour sold going to the Government and the remainder to us for our profits. Now, that is what we will do with the one dam and the two nitrate plants.

Of course, when Dam No. 3 is built we will put in another nitrate plant, and if its size is in the same proportion to the output of the dam, then our proposal will apply to it the same, and if not, the difference can then be adjusted; and so on with the whole development of the river. But when we can make nitrates at a profit, then the returns to the Government will be greater.

Mr. McKENZIE. My reason for asking about your profit in case you utilized all the water power in the production of fertilizer, is because in your contract, as you have submitted it, you would then be dependent upon the will of the Secretary of Agriculture as to the amount of your profit; is that not true?

Mr. BUTLER. We can never sell nitrates under our proposition at a price higher than he would approve of.

Mr. McKENZIE. If all the power was going into the manufacture of fertilizer and you were not selling any, for general use, then you would be dependent, under your contract, for any income or profit upon the will of the Secretary of Agriculture?

Mr. BUTLER. We had thought of that, and that is why we do not propose to make any profit from the sale of nitrates and fertilizers, and this is the only sure way to guarantee cheaper fertilizers to the farmers; it is not our idea that any of the fertilizers will be sold at a profit.

(Thereupon, the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF HON. MARION BUTLER, ATTORNEY FOR MR. FREDERICK E. ENGSTRUM—Resumed.

The CHAIRMAN. Senator, Mr. McKenzie this morning, when we adjourned, had finished asking you such questions as he desired to ask, and we will continue, if you please. Mr. Hull would like to ask you a few questions.

Mr. HULL. Senator, I am considerably impressed with some features of your proposition, and especially with the preservation of nitrate plant No. 1. I think that should be done in any case. What is your estimate as to the capacity of that plant, if it is made available as at present planned.

Mr. BUTLER. The statement of the Chief of Ordnance is that if modified and made an operating plant, according to the plans they had in view, the capacity would be 30 or more tons per day of ammonia.

Mr. HULL. It is a very small plant, then, in comparison with No. 2.

Mr. BUTLER. Oh, yes. You see, when they built that plant on the Haber process, we did not know all of the process; it was an experiment, so we were not going into it on as big a scale as on the cyanamid process, which we thoroughly knew. We built it as far as we knew how to build it by the Haber process, experiment on the remainder; it was built small with a view to trying to work out that process, feeling that we ought to have both processes. The idea was to enlarge it, if it was a success. We know now how to equip and run the best Haber process plant in the world. What we consider now to be the most economical thing to do, is to complete it by the improved methods which we have worked and put it to work at once. It would be better to build a larger plant, if we were starting out initially, but the sensible thing to do now is to complete it as it was started. There is a complete steam plant standing by it, so we could begin to operate this plant before Dam No. 2 is finished.

Mr. HULL. And that plant, as I understand you, would make about 10,000 tons per year or about one-tenth the capacity of plant No. 2.

Mr. BUTLER. A little more than that. It is three times as large as the Haber plant at Syracuse.

Mr. HULL. Yes; just a shade more. Have you any estimate as to the cost under that system compared with the cost under the cyanamid process?

Mr. BUTLER. Germany and the Syracuse plant have proven that it is much cheaper and it will be very much cheaper when we can make the changes and improvements which I indicated this morning, the new catalyst and the new electrolytic cell for getting the hydrogen instead of passing the water over coke to separate it. When we can use the hydroelectric power, it will be much cheaper, and that is the line of development along which the world expects to see great progress made in the fixation of atmospheric nitrogen. The new catalyst, which is the most efficient in the world for joining the hydrogen and the nitrogen we will put in at once. The electrical process for producing the hydrogen we will put in when the hydroelectric power is available; and then we will also put in the liquid-air method for getting the nitrogen from the air, which is also much cheaper than the method now used at Syracuse and also now used in Germany. When that is done we can produce nitrogen for fertilizers much cheaper than anyone else is doing it, and very much cheaper than it can be done by the cyanamid process.

Mr. HULL. You say it will be much cheaper; how much cheaper, proportionately?

Mr. BUTLER. That is difficult to say.

Mr. HULL. Yes.

Mr. BUTLER. We do not know until we do it. Germany is the only people who are doing that. At Syracuse they are simply going to the point of making the ammonia, and they stop there, but they are doing it cheaper than they thought they could when they started and are making progress. So we are on the edge of development; it is an undeveloped art with great possibilities so far as we know. Germany is very successful with the Haber process, but she is experimenting all the time. She made 300,000 tons by that method and is gradually dropping the cyanamid process. Germany made only 100,000 tons by the cyanamid process last year, and she is now pushing the Haber process because it is much cheaper.

Mr. HULL. You incorporate in your proposition the purchase or the turning over to you of the Warrior or the Gorgas plant.

Mr. BUTLER. Yes; we lease it; it is necessary at present. We might develop enough power so that it would not be necessary later, but we need it for the construction work and to operate the plant successfully until we get the dam built; it is the cheapest power we can get. It is cheaper to get it over the transmission lines from the Warrior plant than from the two stand-by steam plants that are there now, therefore it is very desirable. If the Government wanted to sell it later, that would be a question for negotiation; but it is needed for the economical use of the property for the present, certainly.

Mr. HULL. I am rather uncertain in regard to that Gorgas plant. Perhaps if I was down there and could look it over, I could get the proper angle. You all seem to want that Gorgas plant. It is 80 miles away from Muscle Shoals.

Mr. BUTLER. Yes.

Mr. HULL. And it is simply a duplication, so far as your plant goes, of the steam plant you already have, or would have.

Mr. BUTLER. It is right at the coal mines. You see, it is cheaper to transmit electricity than it is to haul coal.

Mr. HULL. Yes; but you do not, any of you, figure you would need it after you get the dam completed.

Mr. BUTLER. Well now, frankly, we could use it all the time in this way: In making more than 100,000 primary horsepower from the water power for the 365 days' peak load, we could increase that primary power by supplementing it with steam power and do it cheaper from that plant than from the two stand-by plants, and to that extent it is a matter of continuing importance; just to that extent, and that extent only.

Mr. HULL. I presume you think, then, that the Government would have the right both legally and morally to take that plant away from the Alabama Power Co.?

Mr. BUTLER. We, of course, do not desire to become a party to that controversy, and it does not enter into our proposition at all. You see that controversy is in case the Government was to sell it. Our offer is the use of it under a lease that would come, as we take it, within that contract which the Government has with them.

Mr. HULL. But, if we should accept your proposition, you certainly would become a party to the taking over.

Mr. BUTLER. We take it over as lessee. We would simply operate it just is it has been operated by the Government, and for the same purposes.

Mr. HULL. And, assuming it costs five or six millions of dollars, that cost would go in against the proposition, would it not?

Mr. BUTLER. Certainly. But the Government owns the larger part of that plant already; and, as I have stated, it is essential until we build the dams and is desirable afterwards. We could sell the Alabama Power Co. all the power that they need for their customers, and that is all the need they have for that plant. So, there should be no litigation about it under our lease.

Mr. HULL. Now, there is another part of your proposition that I want to ask you about, and that is, you do not have any capitalization or any paid-up capital in your proposed company. That was gone over this morning by Mr. McKenzie.

Mr. BUTLER. Yes; we have not yet stated the amount of our capitalization for the reasons given, and because the bond covers faithful performance.

Mr. HULL. Now, what kind of a bond do you think could be executed that would cover a proposition of this kind?

Mr. BUTLER. It is for the faithful performance of everything we agree to do as lessee, and it is to be approved by the Government. So far as we are concerned, a bond can not be made too strict or go too much in detail, because people who expect to live up to their contracts do not object to binding themselves under a good and sufficient bond.

Mr. HULL. But what kind of a company could guarantee the proposition?

Mr. BUTLER. When we have given a bond, of course, the bonding company is liable. If our company were absolutely penniless and was not responsible for damages at all the bond would be, and besides our company will be composed of men of some standing and responsibility, and also men of a good deal of means, but the bond is the important thing. I should take it that if we were worth an aggregate of one thousand million dollars, you would want us to give a bond, because our assets, in case of death, are wound up in a year, and money can disappear, but a bond is good for the whole period. So, the bond is the thing that the Government needs, no matter if the five richest men in the United States were our stockholders and directors.

Mr. HULL. Then, the bond you contemplate is your own personal bond and not the bond of a surety company, is that it?

Mr. BUTLER. We can make the bond either way; but the best way, of course, is for the bond to be given by a bonding company. We pay for the bond. The bonding company is responsible in damages. Now, it does not make any difference whether it is an individual or a company, we pay for the bond, and we are able to do that.

Mr. HULL. Yes; but is there a bonding company that could guarantee a contract the size of which this will be?

Mr. BUTLER. We think so. We have looked into that and we are assured that we can give the bond, otherwise we would not be here with an offer.

Mr. HULL. Well, I do not know, but I rather doubt it, because, if I remember correctly, there is a law somewhere that prevents the Government from taking a bond from a surety company for over 10 per cent of their entire capital stock.

Mr. BUTLER. I am not familiar with such a law.

Mr. HULL. I do not think there is any company in this country large enough to guarantee this contract under that rule. I may be mistaken.

Mr. BUTLER. As for that matter we could give several bonds in different bonding companies. Besides a bond, I take it, would cover the faithful performance, not in a blanket way, but would be divided into sections, and any failure to perform would be a forfeiture under that section of the bond at once, so that if we failed at all, it would not be a question of going on indefinitely and continuing to fail, but we would be responsible under the bond the very first time the Government would call upon our company under any clause of the bond for any part, or for our first failure to perform; and, of course, if we have defaulted on the bond in one respect, we would be called to account at once in damages; so I can not see how the bond would be required to be as enormous or as large as if we agreed to build the dam and do all the construction for a specific sum; because in that event, we would, of course, have to have a bond big enough to cover a fixed amount of money. However, we made

no conditions about the kind of bond, and we feel entirely confident that we can satisfy the Government with a bond, and can give any reasonable bond that is asked.

Mr. HULL. If I understand your proposition correctly, in a way, it is a profit-sharing proposition for the Government on the entire project, the Government to furnish the money to complete the project and to pay a certain amount, I think, 5 per cent on the cost, and then to share in different ways in the profits therefrom; is not that it?

Mr. BUTLER. Well, we pay a rental for the lease and it is based on profits, but it had not framed itself in our minds in just that way. This proposal has been drawn as a result of trying to find some practical business method on which we could undertake this great proposition and do it in a way that would produce the results that the Government expects, and, at the same time, be safe for us to do it from a business standpoint. It is a difficult problem to draw a lease contract to operate over a period of 50 years, and we have had great difficulty in doing it; we have changed the form of it a number of times, trying to simplify it, and that has been a very difficult thing to do. Now, we have done the best we could, and, as Mr. Engstrum stated to you, we are ready to modify it within any limits that would leave it a decent, sound. business proposition, because the purposes that are set forth here we intend to carry out, if given the contract, and we are willing to be bound in the greatest detail to carry out these purposes.

This is not a philanthropic offer any further than the results to be accomplished will be of the greatest public benefit, and the Government will get a handsome return on the investment, while, at the same time, we will make, not an immense fortune, but a good and a reasonable profit. We propose to carry out a great public purpose to result in great public good, and we guarantee the Government a definite rental for the lease, that rental to increase as more power is developed.

Mr. HULL. As I understand it——

Mr. BUTLER (continuing). And we could not see any better way to do it than to guarantee to the Government a certain definite income from the sale of power not needed to run the two nitrate plants. Our profits are to come from the same source; the nitrates are to be sold at cost or less—no one is to make a profit on that. This, I submit, is a simple proposition and a fair and just one.

Mr. HULL. You would not object seriously if convinced that certain parts of your contract should be changed in order to make it a better contract for the Government, if we saw fit to ask you to change it, and you would agree to that?

Mr. BUTLER. No; and we so stated this morning; and, while that point is up, I will say right now that I have been asked since the morning session for a further explanation about that amendment which we offered to section 19. The question is: What profit would that mean to us, and what do we do to earn it. I will answer that now:

Under what were known as cost-plus contracts during the war there was no limit to cost and really an inducement to increase the costs. Under section 19 of our proposal, as amended this morning on our own motion, all this work will be done by the lowest bidder, and the lowest bid will determine the basic cost, but that does not include overhead or any engineering charges, and the percentage fee of 5 per cent paid to us for superintendence and for engineers and for all that sort of thing is a most modest sum. We are offering to do that just as cheap as we feel it is possible to do it and employ the highest-class men in the country, men who are fit to handle such a proposition. That is what section 19 means, and if it is not clear as worded we will make it so.

Mr. HULL. Then this fee that the Government would pay would go directly to you personally or to the proponents of the proposition.

Mr. BUTLER. Yes, of course; and we will be very modestly paid for the service that we must render on so important an undertaking. We must not only employ the very highest class engineers and the best experts for redesigning the nitrate plants, but the administration there and every kind of overhead charge and expense in seeing that the contractors do their work in good faith, will fall on us. The Government will hold us to our bond. All of those things we have figured out, as far as we could, from every angle. The Government is not responsible for anything, and we are responsible for everything under our bond and if we can not do this and have a profit left, then we do not get any profit. It is a very small fee.

Mr. HULL. Of course, under the estimated cost of Dam No. 2, this 5 per cent would practically mean $150,000 as a fee for the finishing of the job.

Mr. BUTLER. Out of our fee we will have to pay all expenses over and above the bid of the contractors.

Mr. HULL. And you will pay the overhead, etc., out of that and not out of the capitalization of the company.

Mr. BUTLER. Yes; if the 5 per cent fee will cover it; if not, then we will have to pay it out of the capitalization of our company. We will have to pay it from some source, or our bond will be responsible for it.

Five per cent is the usual engineering fee by itself, and we have employed already one of the greatest engineers in the country, who will carry out this construction for us. As I said this morning, but I say it again, if the Government will finish this work and then lease it to us, we are ready to make such a lease. The construction part of this proposal is an incident only, but it must be done by somebody. Now, we are willing to do it, and do it as cheap as it can be done on any decent, business basis. The finishing of the dam does not interest us much, but we do desire to redesign the nitrate plants if we are to be given the lease to operate them.

Mr. HULL. I made a mistake, did I not, in saying it would be $150,000?

Mr. BUTLER. You meant $1,500,000.

Mr. HULL. Yes; that is quite a difference.

Mr. BUTLER. But, as I say, it is the usual engineering fee.

Mr. HULL. It appears to me as though that was a rather large fee for simply the superintendence of the job.

Mr. BUTLER. And to cover all of the expenses.

Mr. HULL. The plans are all there and you know just what you are going to do.

Mr. BUTLER. That amount of money will not go very far during the period it will take to do all of this work, and I fear that we will be digging into our capitalization before we get through. But we say to you, have the Government finish the dam, if you think it can be done cheaper that way. What I am interested in is the lease, and in doing the things that I know we can do to add to the prosperity of this country. Besides the development of the art of the fixation of atmospheric nitrogen is a most fascinating proposition.

Mr. MORIN. Is it necessary to build Dam No. 3 in order to produce fertilizer or fertilizer compounds?

Mr. BUTLER. No; not for the two nitrate plants we have there now, and there being no market now for that much power, and the art of making the nitrates being so undeveloped, we felt there was not justifiable reason to build Dam No. 3 at this time. No business man would do it on his own hook, and therefore, we have not made any offer asking the Government to do it now.

Mr. MORIN. Is it necessary to complete Dam No. 2?

Mr. BUTLER. Yes; otherwise your property there will deteriorate and go to wrack. It will only be two or three years until what has been done there on that dam alone, at a cost of between sixteen and seventeen million dollars. will be gone and all the other property is standing idle and deteriorating. If you are not going to complete Dam No. 2 you ought to blow it up and get it out of the river. It is just a hindrance; you must either throw the whole thing up or complete it. Now, when you complete it you have two nitrate plants there with a modest outlay compared with what they cost originally to redesign them, which will be a going concern, that will render great public service and will finance itself under our proposition without any more expense to the Government; and it should soon be a money-making proposition—that is what everybody hopes and believes.

Mr. MORIN. As I understand you, plant No. 1 and plant No. 2 in operation will produce all the fertilizer that will be marketable throughout the country at the present time.

Mr. BUTLER. No; we can produce about 230,000 tons, roughly speaking, of ammonium sulphate there. You understand you can make more ammonium sulphate than you can ammonium nitrate. It is about 120,000 tons of ammonium nitrate. This would make between 2,000,000 and 3,000,000 tons of fertilizer, and our consumption of fertilizer is now about 5,000,000 tons and ought to be over 10,000,000 tons. So it would make about one-third of the fertilizer needed. That river will be developed some time, and we can and will go on and finish developing it, if we have this lease, until we furnish all the nitrates for fertilizers needed in this country, or practically so, by building Dams No. 3 and No. 4 and No. 5 and No. 6, and storage dams up the river, conserving all the water;

and the time will come when we will do that. We feel it was not wise, as a business proposition, to develop that whole river to-day, for two reasons: First, we have not the art of fixing nitrogen from the air to a point where it is a proven commercial success; that is, where it can be done profitably, and we have enough invested there, by completing it, to go on and develop the art; and, second, there is not now sufficient demand for power to justify it. There will come a time in a few years when business will grow up; manufacturing enterprises and these power companies around us will want more power and will buy it from us; but just at present that situation does not exist, and so the common-sense thing to do, from every standpoint, is to save what we have invested there and use it in the most economical way, and continue the development when called for. We can produce enough nitrates there now to have a beneficial effect upon the price of Chilean nitrates.

Mr. MORIN. Then in your judgment it is not necessary to build Dam No. 3 either for fertilizer purposes or power purposes there at the present time.

Mr. BUTLER. Not at the present time. If Dam No. 3 was finished to-day, and it was to be leased to us, the thing we would start doing to-morrow would be going out looking for somebody who would invest capital and come there and start small manufacturing enterprises around there to be customers. We would have to start out and develop that business, and it does not appeal to us as business men to do it; and we have not the face to ask the Government to invest that money and build another dam now. There is no public reason that will justify such expenditure of public money at this time.

Mr. JAMES. Senator, is there anything in the contracts between the United States and the Air Nitrates Co. and the United States and the Alabama Power Co. that would interfere with your proposition?

Mr. BUTLER. We think not.

Mr. JAMES. About how much do you think it will cost to build Dam No. 3?

Mr. BUTLER. There are no plans and specifications.

Mr. JAMES. You have not figured on that?

Mr. BUTLER. It is just a guess. The borings are not finished. The Government itself has put down about 90 borings there, but they would not start the Government engineers to building a dam at No. 3 without finishing those borings and examining thoroughly the condition of the river underneath. It is a treacherous rock, and while they feel they can master it and handle it, you never know when you are dealing with limestone and put on pressure, that the water will not find a hole somewhere and come out underneath your dam. That is a thing you have to be very careful about in a limestone country. We know generally that the dam will be more expensive for the power produced than Dam No. 2, because of the formation of the hills. You will have to have a very long dam and the hills are not high and are not close together, and you will have to build a very long dam and get less power than you get from Dam No. 2. So it is not as economical, a dam and will not produce as much power. An ordinary citizen standing around there, as well as an engineer, can look at the river and see that.

Mr. KEARNS. I have not heard the previous testimony of this witness but I would like to have the stenographer read the first question asked by Mr. James and the answer.

(The stenographer read as follows:)

"Mr. JAMES. Senator, is there anything in the contracts between the United States and the Air Nitrates Co. and the United States and the Alabama Power Co. that would interfere with your proposition?

"Mr. BUTLER. We think not."

Mr. KEARNS. That is, you mean that under your contract you would not need the holdings of the Alabama Power Co. or the Air Nitrates Co.?

Mr. BUTLER. The contract with the Air Nitrates Co. is only in the event the Government sells, and we are simply leasing. In the case of the Alabama Power Co. the Government could lease that property just as the Government is using it now. The Government is exercising title over it and using it, and can continue do it; and in leasing it to us, would simply be continuing to exercise authority over it as is now being done. Selling and leasing are very different things. Besides the Government owns the majority interest in that plant.

Mr. KEARNS. Then I misunderstood the question and answer. You would require the holdings of the Alabama Power Co. if your contract should be accepted. In other words, your contract covers the holdings of the Alabama Power Co.?

Mr. BUTLER. Yes; the contract covers that, and for this reason, that until we complete the Dam No. 2, we will have to use steam power. The steam power from the Warrior plant can be utilized cheaper than from the two steam plants at the property. It is at the mouth of the coal mines; that is the reason it was built there; the loss over the transmission line is small compared with the cost of hauling coal; it is the most valuable power for use to use in operating the plants that are there and in finishing the construction of Dam No. 2, and therefore is most desirable. It is the power that the Government would certainly use if the Government was going to complete this project itself. It would certainly hold that plant until they completed the dam, if not longer.

Mr. MILLER. Senator, I have been much interested in your talk this morning. As I understand it, you and your associates have organized what might be termed an operating company.

Mr. BUTLER. Yes.

Mr. MILLER. To carry out the peace-time purposes indicated by the original legislation?

Mr. BUTLER. And to carry out the war-time purposes when called upon. We stand in readiness in that event to either turn over the whole plant or operate it under the direction of the Government.

Mr. MILLER. It strikes me, Senator, that the principal, practical obstacle in the way of your plan is that it presupposes doing exactly what the Congress at the last Congress refused to do; that is, much to the regret of some of us, the Congress refused to complete the dam.

Mr. BUTLER. Much to my regret, as I stated this morning.

Mr. MILLER. Your plan presupposes a complete reversal of the attitude of the Congress as last expressed. The unfortunate, the very unfortunate situation, that confronts the Muscle Shoals project is the enormous cost of the development of the water power.

Mr. BUTLER. Yes.

Mr. MILLER. It seems like whoever located it there has chosen to locate it at a place where the development of the water power necessarily creates a power five or six times larger than the requirements of the plant, and therefore, five or six times as expensive. Your plan is to have the Government complete this dam on the cost plus 5 per cent plan.

Mr. BUTLER. We have used those words in section 19, but the words have been so misunderstood and have acquired such different meanings during the late war, that really we ought to have tried to find some other words; but those are the words that came into our minds, and unfortunately, we have used them.

Mr. MILLER. Yes; it is a bad word to use.

Mr. BUTLER. It was unfortunate, because our contract is not a "cost plus" one, as understood during and since the war. We fix cost by the lowest bidder and simply ask a 5 per cent fee on that low and fixed cost.

Mr. MILLER. Yes; we had a lot of experience with these cost plus patriots during the war. The Nation was full of them, and a very peculiar class of patriots they are.

Mr. BUTLER. There was no protection to the Government about the cost, and that is why I offered the amendment this morning to try to make it absolutely clear that the Government would be protected under our contract.

Mr MILLER. And your amendment was very lucid and covered what I would have called, and what I think you, yourself, realize, a rather awkward clause in the contract.

Mr. BUTLER. Yes.

Mr. MILLER. It was very clearly the intention of Congress, as I get it, although the legislation was passed when I was not a member of this committee, that some such policy as you have outlined here should be carried out; that is, some sort of an operating company was clearly in the congressional mind when this legislation originally passed.

Mr. BUTLER. Yes; I have so understood.

Mr. MILLER. And you are undertaking now——

Mr. BUTLER (interposing). Yes; we are offering to form a company to carry out the declared purpose in the national defense act.

Mr. MILLER. As distinguished from the offer of the Alabama Power Co., which was exclusively a power proposition, your offer is in the nature of an operating company.

Mr. BUTLER. Yes.

Mr. MILLER. To carry out the peace-time purposes and also to stand by for war emergencies.

Mr. BUTLER. Exactly.

Mr. MILLER. Senator, now, let us see just a moment, what kind of proposition we can outline to our colleagues on the floor of the House. In the first place, this proposition of yours will require a complete Congressional reversal of what was its policy last year. You then take hold of the completed plant as an operating company and there is possibly a bond for the faithful performance of your duties.

Mr. BUTLER. Yes.

Mr. MILLER. I do not suppose the bond would guarantee that your proposition would be a financial success.

Mr. BUTLER. It would bind us to do what we agree to do, and the Government would get a certain income or rental regardless of what we got. That much of it the bond would cover, because that is definite and specific.

Mr. MILLER. And, as you said to Mr. McKenzie, your corporation now is with empty pockets. It has no operating fund to commence to operate this plant. You are hopeful, however, under economical and good business management, to make the surplus power establish a fund for the operation of your plant.

Mr. BUTLER. Yes; but pockets not entirely empty.

Mr. MILLER. Operate it under the steam power until your hydroelectric power comes into production.

Mr. BUTLER. Yes; but we are not entirely without means, and our company will have a sufficient capital for an operating company.

Mr. MILLER. And your plan is further, aside from calling upon the Government to complete this dam at Government expense, which will be in the neighborhood of $32,000,000, is it not, Mr. Chairman?

The CHAIRMAN. No; the Government said $25,000,000.

Mr. MILLER. $50,000,000 for both dams.

Mr. BUTLER. From $22,000,000 to $27,000,000 have been the various figures submitted before the committee to complete Dam No. 2.

The CHAIRMAN. Of course, Mr. Ford's people proposed to complete both dams for $42,300,000. The Government engineers first agreed that the amount would be $28,000,000 apiece or $56,000,000, but when prices began to fall, they finally said that both dams could be completed for $50,000,000.

Mr. MILLER. And then again they gave us figures of $32,000,000 and $19,000,000 at some place in the hearings. You provide then that the Government shall also expend approximately $7,000,000 for the rearrangement of these nitrate plants.

Mr. BUTLER. Yes.

Mr. MILLER. Then that would call upon the Congress for $7,000,000 more in addition to what it would take to complete the dam.

Mr. BUTLER. Yes.

Mr. MILLER. Now, by the expenditure of these respective sums on the reconstruction of these nitrate plants, it would be your idea to follow out the complete Haber formula of construction in nitrate plant No. 1?

Mr. BUTLER. Yes; we know how to do it. We can make it a going concern and a successful one. We can make it the best Haber-process plant in the world.

Mr. MILLER. And its product is the direct synthetic ammonia.

Mr. BUTLER. Yes.

Mr. MILLER. Do I understand that it is your plan to reconstruct nitrate plants so as to use the arc system?

Mr. BUTLER. We will much improve the Haber process with a new catalyst and with an electrolytic cell and the liquid air method as soon as we have power from Dam No. 2.

Mr. MILLER. Or to leave nitrate plants under the cyanamid process.

Mr. BUTLER. Plant No. 2 is a perfect plant for making nitrates for explosives, ammonium nitrates, and we would not interfere with that plant at all, except to add a sulphuric acid unit.

Mr. MILLER. You would go part way with the plant as it is now.

Mr. BUTLER. The processes are exactly the same down to a certain point, until the last step where you use either sulphuric acid or nitrate acid in treating the ammonia. We would put in the machinery and the unit necessary to take up the process at that point and make the nitrates for fertilizers, leaving the remainder of it just as it is, ready at any minute to make nitrates for explosives for war purposes.

Mr. MILLER. Now, you spoke of the electric arc process originally.

Mr. BUTLER. You mean the Haber process?

Mr. MILLER. The electric arc is not the Haber process.

Mr. BUTLER. The electric process to which I referred is an electrolytic cell for taking the hydrogen from the water. This with the liquid air method and the new catalyst with all the improvements on the Haber process. I am not sure that I understand your question.

The CHAIRMAN. I think the arc process has been referred to before this committee as the French process.

Mr. MILLER. I am frank to say that there is a nitrogen products company for manufacturing nitric acid by the electric-arc process in my State, and it is the only factory of the kind in the United States, but its product is direct nitric acid as distinguished from ammonium nitrate or anything of that kind. They simply get the nitrogen out of the air and the hydrogen out of the water.

Mr. BUTLER. Yes.

Mr. MILLER. Then the proposition which we would have to lay before our colleagues on the floor of the House would be that the Government is to furnish the money to complete the dam, furnish the money for the reconstruction of these two nitrate plants, and then to lease it to your company for its operation.

Mr. BUTLER. Yes. But the consideration being the rental offered and the beneficial results to agriculture and the general public.

Mr. MILLER. Under the terms and conditions specified in your offer here?

Mr. BUTLER. Exactly.

Mr. MILLER. I think that is all.

Mr. BUTLER. Please pardon me to say, Mr. Miller, that I am sure that you did not intend to put us in a false position, and Mr. McKenzie, I think, used the same words also, that we "come empty handed to the Government." Well, we are not coming to buy something or to take title from the Government. If we were, we would pay for it.

Mr. MILLER. I did not mean that expression, "empty handed" in an offensive way, Senator. I mean to say that your company is not organized and has no working capital.

Mr. BUTLER. We are business men enough to know that we are going to give a bond to carry out this contract, and that until we make something from it, we are going to have to carry it out at our own expense. We will be able to do that.

Mr. MILLER. That is the interesting part of it and that will offset what I may have intimated by saying "empty pockets." What working fund has your company that we can assure our colleagues on the floor of the House will be put in as showing the financial basis of this operating company?

Mr. BUTLER. We are going to give a bond to spend whatever is necessary to become an operating concern.

Mr. MILLER. The bond is for the faithful performance of your duty and not the financial responsibility of your concern.

Mr. BUTLER. We will specify in the bond everything that we agree to do in this proposal. We specify the time when we will begin to operate one nitrate plant, and when we will operate both. We have got to begin to make nitrates and we will have to furnish the money if we have not made a profit sufficient on the sale of power. Now, just how long and just how much we will have to finance it, we do not know, but we know we are in a position to take care of it, whatever it may be. We are not offering to do something which requires very large capital from us, but offering a service; offering to perform a function that the Government has declared it wants performed, and we are offering it as reliable, responsible, respectable citizens to be backed by such a bond as the Government will ask to carry out in good faith this Government's purpose, as set out in our proposal.

Mr. MILLER. There is no doubt about the responsibility of the citizens and about their good faith.

Mr. BUTLER. Yes.

Mr. MILLER. But you know that in dealings with people and with institutions, the first inquiry usually is, and you and I have experienced it as men, the responsibility of the company you are doing business with.

Mr. BUTLER. Yes.

Mr. MILLER. That is one of the first things asked, and doubtless will be asked by our colleagues on the floor of the House, and what I was getting at was what responsibility this company has. Now, you say its responsibility will be underwritten by a bond. I have never myself seen that method car-

ried out, and I am wondering how it can be done. I have had a good deal to do, as we all have, with almost all kinds of surety undertakings, but I have never seen a bond that was given guaranteeing the financial success of an institution. If there is no guaranty of the financial success of the institution, and the institution itself is not organized and we have no conception of its financial responsibility, you can see in what an impotent position we are in to explain to our colleagues on the floor of the House the technique of this offer.

Mr. BUTLER. Frankly, we have gone on the assumption that the bond would answer those questions. We have not as yet discussed among ourselves just what capital we would put into the company or how much we would need to reach the point when this will be a self-operating proposition, except in a general way. Of course, if our proposition appeals, outside of that, we will put our heads together and meet that situation. We can and we will do it to the satisfaction of the committee.

Mr. MILLER. I will say this, that no offer has ever been made nor has any suggestion ever been made to the Congress along the lines of your offer.

Mr. BUTLER. It is because we have proposed to render a great public purpose which needs a subsidy, and we have worked out a way to make this project subsidize itself. We have also worked out a profit for ourselves and for the Government, and we do not come to you either as paupers or as philantropists.

Mr. MILLER. I understand that.

Mr. BUTLER. We come to you with a business proposition. We are wonderfully interested, as you are, in what can be done. It appeals to the imagination. It would appeal to us as citizens, but we are trying to make a sound business proposition to do what we conceive to be the Government's purpose and a great public service, and to do it at a reasonable charge for that service. Somebody must render this service and somebody ought to get a reasonable compensation.

Mr. MILLER. But you will appreciate this angle of it, Senator: The Government will have to invest something over $30,000,000.

Mr. BUTLER. Yes.

Mr. MILLER. And it ties itself up with your enterprise if we accept your offer, and the very first thing that any sound business man would ask about a proposition based upon such a substantial appropriation would be the responsibility of the contracting party, and that is the first thing that every Member of the Congress will ask, What about the responsibility of this party to whom we are leasing this very, very valuable property?

Mr. BUTLER. We had not gotten ready to announce the organization of our company. We all know that when we go into a business enterprise we talk the matter over and have our negotiations, etc., and announce it when we get to a certain point. There are several reasons why we have not yet completed the organization. But Mr. Engstrum, who signs this proposition, is alone financially responsible for all the capital that we will need until we will become an operating concern. He is a man of means and has been successful in what he has done. Mr. Engstrum does not pay $75,000,000 of income tax, but he pays a very big one.

Mr. MILLER. Doubtless Mr. Engstrum is able and his associates are able, amply able, to organize a company that is amply able to satisfy the Congress of its financial responsibility.

Mr. BUTLER. There is no trouble about doing that.

Mr. MILLER. If that was done, and we could impart that assurance to our colleagues on the floor of the House, that we are dealing here with an institution that had $1,000,000 or $1,500,000 or $5,000,000 of paid-up capital, and they had enough faith to put up their money, then we could say, "Now, Mr. Congress, you go ahead and carry out the original intention as expressed in this act and lease it to this company and we then will operate it according to our contract." It was something of that character, Senator, that I had in mind.

Mr. BUTLER. Mr. Miller, we will endeavor to meet that suggestion.

Mr. MILLER. I just make those suggestions because I know something of the temper of our colleagues on the floor of the House.

Mr. BUTLER. Yes.

Mr. WURZBACH. Senator, at the present time Mr. Engstrum, who makes this offer, is the only man that is dealing with the Government.

Mr. BUTLER. Yes.

Mr. WURZBACH. But it is contemplated later to organize a corporation to take this over?

Mr. BUTLER. Yes.

Mr. WURZBACH. What assets would the proposed company have upon which to incorporate, outside of the prospective profits that would accrue from this contract?

Mr. BUTLER. I tried to answer that in response to Mr. Miller's question.

Mr. WURZBACH. I understood your answer but I was just wondering how you could organize a corporation and how you could get your charter, and if you got your charter, how you could sell stock, unless the corporation had either tangible property or had valuable rights upon which stock could be based.

Mr. BUTLER. Of course, we can form a corporation and have its capital stock paid into the treasury, if necessary.

Mr. WURZBACH. But unless there was some use for the money that would be paid into the corporation.

Mr. BUTLER. It will simply be to meet any expense until we get to operating, because the plant will be self-sustaining, as we figure it, from the time we begin to operate. Of course, the profits will increase when we have the dams built and have the hydroelectric power.

Mr. WURZBACH. Have you any reasonable assurance, Senator, that men would take stock in that kind of a corporation, paying in cash without having assurance of a return; that is, just to pay the cash into the Treasury without any contemplated use for the money that they are paying in, because you do not need any considerable amount of money because the Government is advancing all the money to make these improvements. I was just wondering what you would do with the money that was paid into the treasury of the corporation and whether men would be willing to go into that kind of a proposition.

Mr. BUTLER. We will not need a large capitalization; it might be more practicable for the personnel of the company to become personally responsible in addition to the bond, and that might answer the question, and be better than putting up a lot of idle money.

Mr. WURZBACH. I think it would amount to that in the end.

Mr. BUTLER. It would amount to that in the end, and that would settle the question.

Mr. WURZBACH. Now, I should like to ask you one more question——

Mr. BUTLER (interposing). And that is a matter we will consider.

Mr. WURZBACH. I want to ask you just one question along a different line: I understand you are not only a practical farmer but also a scientific farmer and have made some study in the matter of soil conservation.

Mr. BUTLER. I have had much experience, and I have given the whole question much study.

Mr. WURZBACH. I have heard a great deal during the hearings about the impoverishment of the soil due to a lack or scarcity of commercial fertilizer. Now, is it not a fact, Senator, that the main cause of the poverty of the soil on land that has been cultivated for a considerable number of years is due to the lack of humus in the soil?

Mr. BUTLER. Yes; but you have got to have a certain state of fertility to be able to get the humus in the soil. You have to use a commercial fertilizer. For instance, you can not grow even soya beans, which is a leguminous plant, without some commercial fertilizer to begin with. All leguminous plants will take nitrogen from the air and manufacture it and put it into nodules on the roots, and then if you turn it under, when it rots, it gives you a humus. Every time you do that you have gotten another step up to increasing the condition of your soil for holding fertilizers so that it will produce successfully. Every step builds up. You can not begin successfully without commercial fertilizer, and it is wise to supplement the turning under of these green crops like peas and soya beans with commercial fertilizers. In fact, any successful farmer is planting and turning under these leguminous plants all the time, but then he supplements that with commercial fertilizers, for then the fertilizers will pay best.

Mr. WURZBACH. There is a temptation, is there not, Senator, on the part of some farmers to depend too much on commercial fertilizer?

Mr. BUTLER. Oh, yes; unfortunately, with our rack-rent system in the South, especially, it is terrific, because it is so difficult to get a tenant to be willing to plant any crop except a money crop. To plant a crop that is going to be turned back into the soil means that he must be interested in that farm

enough to stay there for years and have a long lease; everybody who is on a rack-rent system ought to go to a long-lease system and improve the class of their tenants as quickly as possible. There is great depletion of the soil from planting just money crops like tobacco and cotton.

Mr. WURZBACH. And unless the importance of turning plant life back into the soil is kept in mind, or if we depend too much on commercial fertilizers, the extensive use and the increased use of such commercial fertilizers would do more harm than good in the end, would they not?

Mr. BUTLER. Of course, you are depleting your soil if you do not add humus and use only commercial fertilizer and less than the plant needs. A plant only partially stimulated by fertilizer becomes a leach on the soil. Of course, every year there is a little decomposition of soil material that will produce a little plant food anyhow, but if you stint your commercial fertilizer, the plant after drawing up all the plant food from the commercial fertilizer you have put in, draws anything else from the soil and leaves it thoroughly exhausted. Of course, that is what you have in mind, and that is the way land gets poorer. It is not the fertilizer that makes it poorer. but it is the plant life seeking some more food besides what you have put in. That is what makes it poorer. You can continue to make some sort of a crop on any soil as long as there is a particle of plant food left. You can not make it so poor that you can not make it produce by adding enough fertilizer, but the valuable way of using commercial fertilizer, and the way to produce the best results is to turn under this plant food so that a certain amount of commercial fertilizers will produce twice as large a crop with that humus in there as it would if you did not have it there. There is the key to the whole business, and those of us who can control our tenants do that. I will not have a tenant who does not plant these leguminous plants every year and turn them under.

Mr. WURZBACH. I understood you were posted on those matters and I thought it would be proper to get this information in the record.

Mr. FIELDS. Senator, you are acting upon the prnciple or holding to the theory that the production of plant food at Muscle Shoals should be given first consideration and anything else is secondary to that.

Mr. BUTLER. During peace times.

Mr. FIELDS. I was speaking of peace times.

Mr. BUTLER. But I think we should also have in mind keeping these plants available in times of war.

Mr. FIELDS. My question would have covered both angles of the proposition if I had said nitrogen instead of plant food.

Mr. BUTLER. Yes; we need more plant food. There is great need for it. We will soon be without any Chilean nitrates.

Mr. FIELDS. What duty are we paying on Chilean nitrates?

Mr. BUTLER. $11 a ton, I think, is the export duty which we pay as a bounty to the Chilean people. That is a tax on our farmers amounting to $11 a ton, and it is a frightful tax.

Mr. FIELDS. What is the present cost of the Chilean nitrates to the fertilizer industry of the country.

Mr. BUTLER. It has been fluctuating very much in price. I should say that it is now something like $48 or $50 a ton. Of course, during the war it was over $100. It was $65 a ton a little while ago; I have bought it all the way from $45 to $110. I think it is now $48 or $50. It fluctuates all the time and really fluctuates without any cause whatever. It can be put up or down because it is a monopoly.

Mr. FIELDS. At any rate, the price is now somewhere around $40 a ton, and practically one-fourth of that is a duty paid to the Chilean Government.

Mr. BUTLER. Yes. I have known it to go up in price without any apparent cause $5 or $10 in a week. It is an arbitrary figure. I think they figure how much we can pay for it and still live and keep buying it. It is a question of what the traffic will bear. That is all there is to it. We are just held up.

Mr. FIELDS. The question of your proposed bond has been discussed. Have you discussed with the Secretary of War the amount or character of bond that he would require or the amount of bond that he feels should be required in the case of a contract, such as you are now proposing?

Mr. BUTLER. Yes; we had two hearings with him on this proposal. He noted and made comment on the fact that we had agreed to give a bond satisfactory to the Governement. And, furthermore, that no matter how much capital we had or how wealthy we were, it was the proper thing to require a bond. We will not object to any kind of bond required; it can not be too technical or strict for us, because we can carry out what we agree to do.

Mr. FIELDS. After discussing the matter with the bonding companies you determined that you could meet any requirements?

Mr. BUTLER. Yes.

Mr. FIELDS. If I have followed you correctly, your income in this proposition is to be derived from three sources: First, from the sale of power; and second, from the sale of the products; and, then, from your cost-plus fee on the construction?

Mr. BUTLER. The fee is limited to the period of construction; under the lease our income is derived entirely from the sale of power after paying the Government a rental of 1 mill per kilowatt hour on all power sold.

Mr. FIELDS. As I understand you, it is immaterial to you whether or not the Government employs you under that method to complete the construction or completes the construction itself?

Mr. BUTLER. Exactly. But we are interested, if we are to have the plant, that the construction work shall be first class in every respect. We have made a special point on that, because we want the highest kind of construction, the most durable construction possible, and we will probably be more insistent on that particular point than the Government itself.

Mr. FIELDS. You would be insistent on that point whether the work was done by you or by the Government?

Mr. BUTLER. Yes.

Mr. FIELDS. Eliminating the fee for construction, you have two other sources of income from this proposition. Let us take up the first one, the income from the sale of power. Have you made an estimate as to what your income would be on the sale, say, of 100,000 horsepower per annum, what would accrue to the Government and how much to yourselves?

Mr. BUTLER. We have not been able to do that with any more accuracy than this committee has been able to determine from the testimony, for instance, which I heard yesterday and the day before from some gentlemen that are in the business, as to what they expect to sell their power for. We know generally what power is being sold for, to the different kinds of industries; we have had to figure on what we think we can sell this power for as a minimum, and we will have for our customer these companies that are now distributing it. We are wholesalers of power.

Mr. FIELDS. There is no other information upon which you could figure at this time?

Mr. BUTLER. Certainly not; there was no other way in which to draw this proposal with that kind of information. We think we can come out whole on it, after paying a decent and liberal rental to the Government. We have done the best we could.

Mr. FIELDS. I realize most thoroughly, Senator, the disadvantage at which you were placed in estimating in order to make a calculation of that character.

Mr. BUTLER. It has been very difficult to do it.

Mr. FIELDS. From such estimates as you were able to make, about what amount do you figure would go to the Government on the sale of 100,000 horsepower, and about what per cent would go to your company? I wish you would tell us that so we will have some knowledge as to what per cent of the income would go to you and what per cent to the Government.

Mr. BUTLER. Let us suppose that we sell power for a mill and a half per kilowatt hour, which is one figure named by the Alabama Power Co. on yesterday; the Government gets 1 mill and we would get the remaining half mill. There you are. It is just a question of what you can sell the power for. In that case the Government gets $2 for every $1. We get——

Mr. FIELDS. By the terms of your contract the Government gets 1 mill?

Mr. BUTLER. Absolutely. If we do not sell it for more than 1 mill, the Government gets all of it, but under the provisions of our bond we have to go ahead, without any profit on it at all.

Mr. FIELDS. What you get above 1 mill——

Mr. BUTLER (interposing). Is our profit. We state in one of the paragraphs of the contract that our compensation shall come entirely from that source.

Mr. FIELDS. And on the price fixed by the Alabama Power Co.. or on that figure that we would regard as the price, from the testimony of the president

of the Alabama Power Co., you would make your calculation at 1 mill to the Government and ½ mill to yourselves?

Mr. BUTLER. On one estimate he made yesterday. I hoped that we would do better than that, and I must say I was not very comfortable to hear him figuring that way. The sale depends very largely upon the bids which will come from the other companies around there, in bidding against each other. In fact, when there is the greater demand for the power it will be bid up, and as the development of the country increases, and the sale of power increases, of course, the money profit will go up. The power companies will soon be bidding against each other for the power that we are producing. They will want to deal with us, and they will be bidding against each other, and so we will be in an advantageous position.

Mr. FIELDS. You can not suffer by reason of the competition among the other companies?

Mr. BUTLER. No; we will profit by it—and the whole country around will profit by it. Some of this power should be sold to the people and the industries in a circle around Muscle Shoals. So we expect to wholesale this power to those who most need it.

Mr. FIELDS. Roughly speaking, about what percentage of the power would you figure you would put into the production of nitrates and what percentage would you market?

Mr. BUTLER. No one can tell until we finished them just exactly the number of kilowatts it would require to keep them going, but we estimate anywhere from 75,000 to 100,000 kilowatts, and the rest of it would be for sale. But how much we can sell, and at what price, is yet to be determined.

Then another thing; we would have to run the steam plants for at least 15 or 20 per cent of each year in order to have much power to sell, after running both nitrate plants. If we have contracted to sell power at a certain price we may, in some years, have to run the steam plant longer than in other years, and that, of course, would cut down our profit.

Mr. FIELDS. With dam No. 2 completed and supplemented during low water periods by the steam plants, what do you figure you could make from the maximum production of power there?

Mr. BUTLER. It is possible to make 440,000 kilowatts if we were to run all the steam power to supplement the water power to its full capacity, except during flood water. We can produce the 440,000 kilowatts for every day in the year, if it will pay. But you can understand that we will reach a point when it will not be profitable to run the steam plants.

Mr. FIELDS. When you supply the market you have to quit?

Mr. BUTLER. Exactly. When we reach the point when it does not pay, we have to stop. It depends. If it would pay, we could make 440,000 kilowatts every day in the year.

Mr. FIELDS. What percentage of the 440,000 kilowatts would be required to operate the two nitrate plants?

Mr. BUTLER. From 75,000 to 100,000, is the estimate.

Mr. FIELDS. Your next source of income is from the sale of your product. Will you explain briefly—and you may have explained it already, but I did not get it very clearly in my mind—just how you figure out the Government is going to have an advantage on that proposition?

Mr. BUTLER. It is this way: How to protect the public from having the products going into the hands of a trust after the Government spends its money, was one of the difficulties we had to face. So, finally, we provided that the nitrates shall be sold at a price subject to the approval of the Secretary of Agriculture.

Mr. FIELDS. You were willing to leave the amount of your profit to the decision of the Secretary of Agriculture?

Mr. BUTLER. No; our profit comes from the sale of power not needed to run the nitrate plants, and the 1 mill per kilowatt hour to be paid to the Government is to be first used to finance the making of nitrates as long as they are made at a loss. Now if the selling price of nitrates is fixed too low, we will not be able to finance the maximum output of the plants. We would be forced to run on short time. This is a serious phase of the matter.

Mr. FIELDS. Instead of fixing a maximum profit that you shall not exceed, you leave the matter open and in the hands of the Secretary of Agriculture?

Mr. BUTLER. Yes, sir; just leave it right open, except that we are to make no profit on nitrates. I will tell you how it will work. We have provided that we are going to make all of the nitrates that can be made, and that the money that comes from the sale of this power is to be used, if necessary, to the extent of 1 mill per kilowatt hour, in financing any loss on the sale of nitrates. Therefore, if the Secretary was to fix the price so low as to exhaust this financing fund, then we would have to stop when it was exhausted. To this extent we will be affected by the price which the Secretary of Agriculture may fix.

Mr. QUIN. Senator Butler, this proposition, from my analysis, appears to be twofold. This supposed corporation and lessee named by Mr. Engstrum is to be in the position of a contractor doing construction work and finishing the dam and changing the plants, first. After that is done and the Governments expends that profit of 5 per cent, which it gives to the contractor——

Mr. BUTLER (interposing). Not a profit; that is to cover the overhead charges.

Mr. QUIN. The Government is bound to pay this 5 per cent above the actual cost of the work.

Mr. BUTLER. The Government pays in all, simply 5 per cent above what the lowest bidder bids to do each piece of work for.

Mr. QUIN. That is not the way I understand it.

Mr. BUTLER. If he bids to do it; we will say, for $100, and he carries out his contract and the work is done, the Government pays in all only $105. That is all there is to it.

Mr. QUIN. The other function of this lessee would be to operate the nitrate plants as stated in here.

Mr. BUTLER. Yes.

Mr. QUIN. And to dispose of all the power generated either by the hydroelectric method or by the steam plant. That is what I understand the function of this lessee would be.

Now, it is not disclosed here who this lessee is. You have been a Member of the United States Senate, and you know the responsibility which is upon this committee. Suppose this committee were to report to the House that the proposition of Mr. Engstrum be accepted. Do you not think that the first question that would be asked by the Members of the House and interested people in the United States would be: Who is Engstrum, and who is the unnamed, unchartered corporation that is the lessee? That is the natural inference, is it not?

Mr. BUTLER. Yes.

Mr. QUIN. We could not answer that question. There is not in this proposition a single line that would bind Mr. Engstrum, and this unchartered, unknown corporation, named as the lessee of course, could not be bound. In order to bind it it would have to have a domicile and a sufficient capitalization. Then we would be gone there. Do you not think you ought to disclose to this committee who these organizers will be and something about the amount that the capital of such a lessee corporation may be, in order that this committee may make any kind of an intelligent report?

Mr. BUTLER. We have agreed to meet that point.

Mr. QUIN. You admit that it is simply a matter of dealing up in the air as to that proposition, as to who make up this corporation, and what its financial responsibility is.

Mr. BUTLER. I again make the same answer.

Mr. QUIN. You can readily see, Senator, as a lawyer, that if this proposition were accepted by the Congress and passed, there is nothing to bind anybody and no financial damage would result to anybody, and if Mr. Engstrum were in the rôle of a speculator looking to somebody to finance this proposition, or to form a corporation to go into it, and he failed, then under the law he would not be liable for a dollar, and this unknown institution could not be.

Mr. BUTLER. I see your point and realize its force. That is the same point, however, that has been raised before several times, and my answer is the same as before.

Mr. QUIN. I take it you must be a pretty big business man to be able to conduct this big farm you have through all these years and not go broke.

Mr. BUTLER. I admit that it has put some grey hairs in my head, to be able to run that farm and not go broke; and I agree that it requires considerable business capacity, because I have been able to succeed at everything else I have undertaken much better than I have been able to succeed at that.

Mr. WRIGHT. I do not know that I understand yet just the terms of this proposition, as to what the lessee will derive from the lease and what the Government will get.

Mr. BUTLER. First we will use enough power to serve both nitrate plants, and then we will sell the remainder.

We will devote 1 mill per kilowatt hour and put it in a trust fund, if you please, for that is what it amounts to, to be used in financing the making of these nitrates now, because you can not make them at a profit now, and we want to begin selling it at once even at a loss. Somebody has to pay for the difference until we can make them at a profit, and then we will turn the whole sum into the Treasury; and, afterwards if we make fertilizer at a profit, the profit on the fertilizer goes into the Treasury along with 1 mill. We did not attempt to figure the income to the Government or what the return from the fertilizer would be because that can not now be determined. But everybody can see that if we were to run along and finally make fertilizer at a profit of $5 a ton or more, that under this provision, the revenue from that fertilizer and the 1 mill per kilowatt hour will all go into the Treasury, because we provide specifically that we do not take any profit from the fertilizer. Our profit will come entirely from what we may be able to sell power at over the 1 mill per kilowatt hour.

Mr. WRIGHT. As I understand the general proposition is that the lessee will be carrying out the purposes and intentions of the Government as originally expressed in the national defense act, instead of the Government doing that itself as a Government.

Mr. BUTLER. Yes.

Mr. WRIGHT. It would be doing it through the lessee, and you propose that this company shall be the lessee.

Mr. BUTLER. Yes.

Mr. WRIGHT. That being done under the terms of this proposition would not the whole thing be a venture so far as any profit to the lessee or any dollars going into the Treasury of the Government would be concerned? It would depend altogether, would it not, on the success of the venture?

Mr. BUTLER. There is no possible chance for us to fail under this proposal. We will use only a part of the power to run both nitrate plants; the remainder of the power we will sell; 1 mill per kilowatt hour of that sum goes to the Government and all we get above that goes to us. How can anybody fail at that? Now, as long as we have to make nitrates at a loss, then the 1 mill will be used to finance such loss.

Mr. WRIGHT. Do you not propose to devote the entire income from the water-power to the production of fertilizer?

Mr. BUTLER. No; we propose to devote 1 mill per kilowatt hour, and anything that we can sell power for in excess of that is our compensation for acting as the lessee of the Government carrying out its purpose.

Mr. WRIGHT. So that part the waterpower may produce will be limited to 1 mill per kilowatt, in so far as aiding the production of fertilizer is concerned.

Mr. BUTLER. We use all the power needed to run the two plants, but 1 mill per kilowatt is used to finance any loss on the fertilizer. Suppose the Secretary of Agriculture says sell it for $10 a ton less, because of the export bonus on the Chilean nitrate. We would have 1 mill per kilowatt hour to finance that loss. When we are a going concern, it finances itself; we have worked out a scheme to do it, to make the fertilizer at a profit sooner or later. We will not be able to make the fertilizer by this process at a profit now unless we called on Congress to subsidize the loss. So I felt that we had to work out a scheme under which this power would finance this proposition.

Mr. WRIGHT. It is not really contemplated that the Government would make a profit out of this enterprise, unless 1 mill per kilowatt hour was not utilized or required to go into the production of fertilizer.

Mr. BUTLER. If it is not required for this purpose, then it goes directly into the treasury.

Mr. WRIGHT. If it is required for the fertilizer the Government would not get anything.

Mr. BUTLER. If the Government wants to make nitrates for the farmers regardless of cost, then we say the only way you can do it is either by using this money from the sale of power for this purpose, or else make an appropriation from which to subsidize the business.

Mr. WRIGHT. From your viewpoint the Government would have this gigantic plant operated to carry out the original purpose, whether it meant any dollars to the Government or not.

Mr. BUTLER. Yes; but with the almost certain prospect of soon doing it at a profit.

Mr. WRIGHT. And the source of the Government's revenue would be derived from this 1 mill per kilowatt hour, that is, if this 1 mill per kilowatt hour was not needed to go into the production of fertilizer it would go into the Treasury of the Government.

Mr. BUTLER. Yes; of course in addition you have that plant there producing nitrates and fertilizers for the benefit of agriculture and also a plant ready for the national defense in time of war; and that is one of the important features of this proposition.

Mr. WRIGHT. It is a very vital element in this proposition.

Mr. BUTLER. It is a very vital element and it is a service which we are rendering. If we reach a time when fertilizer can be sold at a profit then the revenue goes to the Government, too, because we do not take any of the profits that would be made on that; that would go into this trust fund, and it goes along with this 1 mill into the treasury. It is a part of the trust fund for financing this thing. We use that, along with the 1 mill, for operating expenses until we can make a profit, and then the surplus goes into the Treasury, whatever it comes from.

Mr. WRIGHT. Having furnished the power necessary to operate the plants, there may be some doubt about getting the 1 mill per kilowatt hour, and then fertilizer under that plan could not be profitably and economically produced, could it?

Mr. BUTLER. Unless we subsidized it with 1 mill.

Mr. WRIGHT. I am counting that, Senator.

Mr. BUTLER. We can do it from the start from the sale of power.

Mr. WRIGHT. You mean if you get the power to operate the plants from this hydroelectric steam power.

Mr. BUTLER. Yes.

Mr. WRIGHT. That goes into the cost of the production of fertilizer?

Mr. BUTLER. Yes.

Mr. WRIGHT. Then you add this 1 mill per kilowatt hour?

Mr. BUTLER. We know we can sell it for that and more.

Mr. WRIGHT. The question is whether, under those conditions, you are sure you can produce it at such cost that it can be sold at a price at which the American farmer can afford to buy it?

Mr. BUTLER. We will always sell it below the present cost of Chilean nitrates and make up the loss as long as may be necessary from this 1 mill per kilowatt hour, which we will have for this use from the sale of all power. This makes cheap nitrates and cheaper fertilizers sure.

Mr. WRIGHT. You were speaking about the cost of nitrates. I am a small farmer myself. Of course, that cost fluctuates, but the last quotation, I think, was $65 a ton, retail.

Mr. BUTLER. It has fluctuated much recently.

Mr. WRIGHT. You think there is no doubt that the lessee could produce nitrates there at a very much less price than that to the farmer.

Mr. BUTLER. We can not by the present process, with Chilean nitrates around $50 a ton, without a subsidy. But our proposal provides to furnish that subsidy from the sale of excess power as long as may be necessary. We expect soon, however, to be able to make nitrates at a cost less than the cost of Chilean nitrates and, indeed, at a profit. Everybody expects this to come from improvements in the Haber process.

Mr. WRIGHT. Have you considered the far-reaching results that might come from the operation of this great plant on the production of fertilizer?

Mr. BUTLER. It is simply staggering.

Mr. WRIGHT. You think it would not only enable the farmer to produce more crops——

Mr. BUTLER (interposing). But cheaper.

Mr. WRIGHT. At cheaper prices than he can afford to sell them for now, and it would likewise lower the cost to the consumer?

Mr. BUTLER. Yes; the benefits will be Nation wide.

Mr. WRIGHT. It is not for the benefit of any particular section?

Mr. BUTLER. It is truly national; it is a tremendous governmental function, reaching to every person in the Nation.

Mr. WRIGHT. Of great national scope?

Mr. BUTLER. It is of such national scope that it is a governmental function.

Mr. WRIGHT. It almost reaches into world-wide scope?

Mr. BUTLER. Yes; to an extent.

Mr. STOLL. You stated, this morning, that you are one of five directors of this proposed company?

Mr. BUTLER. Yes.

Mr. STOLL. Who are the other four directors?

Mr. BUTLER. Mr. Engstrum will be one. We have not asked the permission of our associates to announce the full directorate. There would be three others. Two would be named by the Government and the other three by the company—there will be 7 in all.

Mr. STOLL. Is Mr. Duke to be connected with it?

Mr. BUTLER. Not unless some arrangements are made from now on. There is no understanding with him now, direct or indirect, in regard to the matter.

Mr. STOLL. Is the Virginia-Carolina Chemical Co. to be connected with it?

Mr. BUTLER. No. In regard to Mr. Duke, I say to you frankly, I do not want to be put in the position of saying that I am glad that he is not connected with the company, because I have respect for him as a business man; but I have made no effort to be associated with him and he has made no effort to be associated with us, and he is not associated with Mr. Engstrum or myself; there has never been any communication between us about this matter directly or indirectly.

Mr. STOLL. Now, Mr. Engstrum is a contractor—that is his business?

Mr. BUTLER. Yes; and an engineer.

Mr. STOLL. I believe you stated that the 5 per cent, that you provide for in section 19, is the usual contract price; that is, the average?

Mr. BUTLER. That is the minimum. The usual fee for an engineer is 10 per cent.

Mr. STOLL. Well, he is an engineer.

Mr. BUTLER. Yes.

Mr. STOLL. Did you not state that is the usual price?

Mr. BUTLER. That is the usual engineer's minimum price.

Mr. STOLL. Mr. Engstrum is an engineer. Would it not be a good proposition for Mr. Engstrum if he could get this work completed, on which there would be an expenditure of something like twenty or twenty-five million dollars with a fee of 5 per cent? Would that not be a good proposition for him to get that job, even if none of the other part of the thing was ever carried through.

Mr. BUTLER. I say frankly that we are interested less in the construction than we are in the lease.

Mr. STOLL. I did not ask you that.

Mr. BUTLER. We have figured on the construction as well as the operation and on what we considered a fair business basis.

Mr. STOLL. I did not ask you that, Senator. I asked you the direct question, Would it not be a good proposition for Mr. Engstrum, he being an engineer, if he could get the 5 per cent provided for in section 19 on a contract of this size, and then after it was done the other part could go to the bowwows, and would still have a good proposition?

Mr. BUTLER. He could possibly make some profit out of the construction. He ought to, but he can make more out of the leases, and his bond would require him to operate the whole plant.

Mr. STOLL. If that is the usual engineer's fee, it must be a good proposition.

Mr. BUTLER. Yes; but I say to you frankly that in our figuring out this whole proposition, the part of it on which we expect to make the most, and the part that has appealed to us is the operation of the lease. Of course, we do not expect to lose any money; we expect to make a fair business profit on the whole proposition.

Mr. STOLL. But the fact remains that Mr. Engstrum's business is that of an engineer and constructor.

Mr. BUTLER. If he was not responsible and could not give a bond, he could not get any important contracts.

Mr. STOLL. That is his business, and it would be a good business proposition in that particular.

Mr. BUTLER. Not as good as some that he has had, or as the lease under this proposal.

Mr. STOLL. One million two hundred and fifty thousand dollars sounds pretty good for two or three years' work.

Mr. BUTLER. He has been doing better than that. But then let the Government go ahead and finish the dam. If the Government will finish that dam, then we are ready to lease and operate the plant under the terms of this proposal.

Mr. STOLL. I want to direct your attention to section 15 which says: "It is agreed that the lessee will not be required to invest in the manufacture of nitrates or other fertilizer compounds, other than that received from the sale of the products of nitrate plants plus 1 mill per kilowatt hour received from the sale of power in excess of that required to operate the plant."

Under this agreement you can not be required and it is understood that you are not going to put 1 cent of money into it. That much is understood.

Mr. BUTLER. It has to be a going concern and we agree to begin work within 60 days, and we give a bond to cover that.

Mr. STOLL. It says you are not to put anything into it except what you get from that.

Mr. BUTLER. We are not called upon to spend our money to complete Government property. We offer to finish it or let the Government finish it, and then to lease and operate, giving a greater rental than anyone else has offered. I said to Mr. Engstrum when he wrote that, "Why do you put that in?" He said, "I did not want to appear to be giving something; this is a plain business proposition; there is no philanthropy in it."

Mr. STOLL. That is a definite statement there that you are not going to put any money in it except what you are going to get out of it after it has been put in operatin. I want to call your attention to section 18, which reads as follows: "It is also further agreed that when nitrates can be made at a profit or when the cost of the same has been so reduced that the funds so arising from excess power and fertilizer compounds are not needed in whole or in part for financing such productions as herein provided, the said funds shall be paid by the lessee into the Treasury of the United States."

What do you mean by that? I do not exactly catch the significance of that.

Mr. BUTLER. We propose to finance the making of nitrates while we make them at a loss, and we will do that out of the proceeds of the sale of power not necessary to run the nitrate plants; that is, we will use one mill per kilowatt hour of power we sell to cover any deficit. When that time passes we will pay the whole sum into the Treasury.

Mr. STOLL. How in the world can you do that when you have already stated that you are not going to invest one cent in the manufacture of nitrates or compounds as set forth in section 15. Are not those two sections contradictory?

Mr. BUTLER. No; because we will begin selling power the very minute we begin to operate, and there will be an income from the power we do not need for the manufacture of nitrate. We will set aside that amount to finance the making of the nitrates as long as we have to make them without profit.

Mr. STOLL. That section contemplates your having had to make them without a profit, because it says "when the nitrates can be made at a profit."

Mr. BUTLER. As soon as we get 1 mill from the power we sell we use that to cover the difference in the cost of the manufacture of nitrates that we are making at a loss, because we are practically subsidizing it out of the power we sell, and this is the source from which we get the funds to finance it.

Mr. STOLL. How can you get away from this, "when the cost of the same has been so reduced that the funds arising from the sale of excess power and fertilizer compounds are not needed in whole or in part for financing such productions as herein provided?" To what extent will it be needed to finance; when will it commence to go into the Treasury of the United States?

Mr. BUTLER. Whenever we can make nitrates and fertilizer without loss, then all of that 1 mill per killowatt hour goes into the Treasury as rental on the lease.

Mr. STOLL. Where do your profits come from?

Mr. BUTLER. That comes from the sale of the power above the 1 mill.

Mr. STOLL. You give all the profits from this to the Government?

Mr. BUTLER. No and yes. We are financing this whole thing by the sale of power not needed to run the nitrate plants. Whenever we sell a kilowatt hour of power we set aside in a trust fund 1 mill, no matter what we sell it for. We may only sell it for 1 mill, and then the Government would get it all. We may sell it for a mill and a half. One mill is set aside for the Government and we take the balance. We do not take anything from the sale of fertilizer. We put it back into the operation, and we do not use the 1 mill except whenever it is needed to finance the making of nitrates at a loss. It goes into the Treasury. Our books are open to inspection. Whenever we can make fertilizer without a loss, then the 1 mill goes to the United States Treasury.

Mr. STOLL. You do not get any of that.

Mr. BUTLER. We do not get any of the 1 mill. We only get whatever we are able to sell the power for above the 1 mill. What the Government gets is absolutely fixed by the contract; what we get varies according to what we may be able to get for power.

Mr. STOLL. Your profit is in the selling of the power?

Mr. BUTLER. It is in the excess above the 1 mill.

Mr. STOLL. You get no profit from the nitrates or from the fertilizer?

Mr. BUTLER. Absolutely none. The price is subject to the regulation of the Secretary of Agriculture. We hope and believe this plant will in the near future be making nitrates for fertilizer at a profit.

Mr. STOLL. If you can not make fertilizer at a profit——

Mr. BUTLER (interposing). We can not when we begin.

Mr. STOLL. If you never do all the revenue the Government will get will be 1 mill per kilowatt-hour for the sale of the power.

Mr. BUTLER. That will go into the financing of the making of fertilizer as long as it is needed; and then it will go into the Treasury.

Mr. STOLL. That is all the Government would get if the fertilizer was not successful?

Mr. BUTLER. Yes.

Mr. STOLL. If you did not sell very much power the revenue to the Government would be very small?

Mr. BUTLER. Certainly.

Mr. STOLL. Do you not think you would have pretty stiff competition from the Alabama Power Co. in selling power in that section of the country?

Mr. BUTLER. No. The fact is, it will no doubt be one of our best customers. We are not going to be retailing power. We will be wholesalers.

Mr. STOLL. That is purely conjecture on your part; that the Alabama Power Co. is going to take your power.

Mr. BUTLER. Certainly; but somebody will take it.

Mr. STOLL. You have seen Mr. Martin on the stand here, or at least I have, and he is not a man who throws up his hands and quits very easily. He has a great concern down there.

Mr. BUTLER. Yes.

Mr. STOLL. That is their business?

Mr. BUTLER. Yes.

Mr. STOLL. Do you think he will quietly take power from you and not start to fight you?

Mr. BUTLER. How could he fight us if we are furnishing power to him cheaper than anyone else?

Mr. STOLL. Is he after power to sell?

Mr. BUTLER. He testified here, and I am satisfied it is true, that he has a demand for more than he can furnish.

Mr. STOLL. Mr. Martin is in the power business.

Mr. BUTLER. So are we, but we are wholesalers.

Mr. STOLL. That is all conjecture; you have to develop that business.

Mr. BUTLER. We can sell it if we offer it on better terms than they can make it or get it from some one else. After paying 1 mill to the Government, we figure we can get out whole on the average and have enough to make us safe, and we know that the demand for power will increase.

Mr. STOLL. If the fertilizer proposition proves a failure so far as producing it on an economic basis is concerned and you fail to get a ready market for it and do not get a ready market for your current, the Government will get no revenue whatsoever and your concern will get $1,250,000 for building this dam on a 5 per cent contract. That is true, is it not?

Mr. BUTLER. If we are going to begin by supposing something which will never happen, then you can end by concluding anything you desire. There is there now a market for 100,000 horsepower, and this will finance the running of both nitrate plants on full time, with nitrates sold at a loss of at least $5 a ton or more.

Mr. STOLL. I just wanted to see if my idea of your contract was correct.

Mr. BUTLER. We can not start to-morrow making nitrates at a profit, but we can sell enough power to finance the making of it at a loss.

Mr. STOLL. The only thing that is certain is that Mr. Engstrum, who is a contractor and an engineer, and his company will get $1,250,000 for building this dam, and then if the other proposition proves a failure, that is the fertilizer, and there is no special market for your current, the whole thing falls down and is back on the hands of the Government and you have not invested one cent in it; that is true, is it not?

Mr. BUTLER. But it can not be a failure. We give a bond to run those nitrate plants and we can do it by the sale of power, no matter if the nitrates are sold below cost. The plant finances itself, pays us a profit, and it pays the Government a profit, and it produces cheap nitrates. This is plain, simple, and certain. How much more can anyone want us to do?

Mr. STOLL. Who drew this contract?

Mr. BUTLER. Well, it has been the result of the thoughts of a number of people. There is no one person who drew it. It has been worked over many times. Mr. Engstrum has written some paragraphs and has changed some; I have writen some and changed some; and several other people have had a part in it. We have conferred with everybody whom we have been associated with; it is a composite production.

Mr. STOLL. Have you ever been in the electrical business?

Mr. BUTLER. No; not as an expert, but I know much about it.

Mr. STOLL. Has Mr. Engstrum ever been in the electrical business?

Mr. BUTLER. No; he is a contractor and an engineer.

Mr. ENGSTRUM. I have built power plants for the Edison people in southern California, also the industrial plants for the production of potash for the American Trona Potash Corporation.

Mr. STOLL. Those were built according to specifications that had been drawn. He has not been engaged in the marketing and selling under competition of electrical current or engaged in the business of making fertilizer from nitrogen from the air, or any of those things; had no experience in that; you have no experience to offer and you are putting up no money.

That is all, Mr. Chairman.

Mr. CROWTHER. Mr. Fields asked you a question, and I am sure that he did not quite mean it as he stated it, perhaps, and you did not mean to answer to the effect that the tonnage charge on Chilean nitrate was $11.50, or the export charge. Then he said that in the $45 a ton there was about 25 per cent charge on fertilizer due entirely to that fact. Of course, he does not mean that, because there is not a ton of Chilean nitrate in a ton of fertilizer.

Mr. FIELDS. I meant 25 per cent of the nitrate in the fertilizer.

Mr. CROWTHER. That has been the idea carried all through these hearings, that about one-quarter of a ton of fertilizer was spent entirely for the Chilean export fee. That is not so, is it?

Mr. BUTLER. No.

Mr. CROWTHER. That is 15 per cent nitrogen, is it not?

Mr. BUTLER. Sixteen per cent is what it ought to be; 16 per cent of nitrogen.

Mr. CROWTHER. If it was very heavy fertilizer, there would be 10 per cent of nitrogen, and if it was only nitrogen it would be $1.50, would it not?

Mr. BUTLER. The usual formula of fertilizer is to take this Chilean nitrate, which has 16 per cent nitrogen, and put in 3 or 4 per cent of it and about the same of potash and from 8 to 10 per cent of phosphoric acid, and make it up in the usual proportion in a ton of commercial fertilizer. In that ton of commercial fertilizer three-quarters of it is made up of these products and the other is the filler. There is a certain amount of binder or rather holder required. There is about 25 per cent of ammonia in the sulphate of ammonia and the remainder is holder, not filler.

Mr. CROWTHER. That is where a great error has occurred in much of the discussion. The word filler has been used when it should not have been used.

Mr. BUTLER. The filler is only the thing which is finally put in the fertilizer by the fertilizer man to add to the weight. When you have the ammonia ready for mixing there is 25 per cent ammonia and the rest of it is the binder or holder. Then you have the nitrate, of which 16 per cent is nitrogen, and the phosphoric acid which is 16 per cent phosphoric acid, and the rest of it is holder or binder. This makes three-quarters of the ton; then 25 per cent of filler is added to that to make the ton of weight.

Mr. CROWTHER. The statement has been made that there is only 320 pounds of fertilizer to 1,680 pounds of filler.

Mr. BUTLER. That is incorrect. On the average, there is three-quarters of every ton of fertilizer that is plant food in the best form in which we can now make it. We do hope, however, that this development will add to the world's supply, which everybody has been looking forward to, and will at the same time

show us the way to concentrate these ingredients, so that instead of having 100 pounds of sulphate of ammonia of which only 23 per cent is ammonia and the rest of it holder, that we can get a holder that would be half that size; that would be a great improvement. There has been some progress along that line, and when we make nitrates by the Haber process there will be less of the holder than is in the nitrates that come from Chile. We possibly will get to the point where we can combine these three ingredients to make what is now in a ton to equal not more than 350 or 360 pounds.

Mr. CROWTHER. In reference to the question Mr. Stoll asked you, as to your knowledge or Mr. Engstrum's knowledge, you have heard the evidence in the previous hearings. I want to ask you whether there has been any evidence given to the effect that Mr. Ford was ever in the electrical business or sold electric power, or manufactured fertilizer, or knows anything about things of that sort, except in connection with his automobile business. Has there been any evidence presented here showing that he knows any more about these things than your people?

Mr. BUTLER. Certainly not.

Mr. CROWTHER. Mr. Stoll suggests that Mr. Ford has a large sum of money in it, or proposes to put a large sum into it. But he is borrowing money from the Government at 4 per cent, computing it at compound interest against the Government, and paying out an amortization fund.

Mr. BUTLER. I do not claim to be an expert any further than I have told you frankly, from my general knowledge and experience; but I do know this: I know what we can do down there, and if you give us this contract, that we will succeed. I feel so confident about it that I am going to devote the rest of my life to doing it; I do not want any better monument than to do a thing of this kind for the prosperity of agriculturists and for the welfare of our people generally. All this can be done with a proper utilization of that great water power. It appeals to a man's imagination as well as to his sound business sense. It is a great thing to do. It is not a philanthropy, because we expect to make money, and the Government will make money and will get a vast benefit from it. The results you are going to get from this water power depend on what it is going to be used for. You can, of course, have this tremendous power used in a way that would be a great disappointment.

Now, I feel that we should avoid the mistake which has been made with the power at Niagara. It is being used for the development of one kind of business or industry. What has been the result? It was allowed to be monopolized for the development of one special thing, which gives practically no general public benefit or good, and does not give any special benefit to the community around there. To-day everybody in New York is up in arms, and the governor of the State is trying to find some way to get around the great mistake they have made in allowing this water power, which should have been used to serve the general public and not for the benefit of a special private industry.

It would be a great mistake to do that sort of thing here. I have had that in mind in drawing this proposal. We provide for selling a certain amount of power, and it will be sold and distributed to conserve the needs of that surrounding and growing community. If you are ever going to use any one great power at any one place for one thing, then heaven knows that fertilizer is the most justifiable thing for which you could use it—nitrates, both for peace and in war. Such a water power should never be turned over to private use and profit.

This proposition uses a large part of the power in making fertilizer and leaves still a large amount to be sold to the public, not to any one enterprise, not to any one farmer, but to the whole circle of people and industries around. So we are doing two things if we develop it on this line. We get the greatest results for the production of nitrates for preparedness, for peace, and war; we are furnishing an enormous amount of power for sale to the surrounding country that will help every individual and every industry as their needs require.

I have had a kind of glowing feeling of pride and satisfaction that we had been able to work out a proposal which from every angle will serve the public good and will never serve any special or private interest above the public interest. It is to have the opportunity to develop this great property along the lines of this proposal, because we have a real desire to see these beneficent purposes materialized and to help do it.

Mr. Chairman, if we are given this contract we will have the best engineering talent available in this country. Mr. Engstrum is an engineer of a good deal of experience, but we felt that in a great proposition like this we ought to have the best engineer who could be gotten in the world. We also wanted to get a man whose name and work is known to you, and who would carry confidence. So we have taken this matter up with General Goethals, and have been fortunate enough to secure his services. Of course, we wanted first to get his approval and to know that it appealed to him and we wanted to employ him and have the benefit of his advice if we were given this contract. So we have reached a contract agreement with him to serve as the engineer named. We have provided in this agreement that there shall be an engineer representing our company, and he will serve as our engineer to do the work under this contract. He is not now in New York; he has had a number of engagements on the Pacific coast, but is now on his way east. We hope he can appear before your committee.

The CHAIRMAN. Will he be ready to come here Monday?

Mr. BUTLER. Mr. Engstrum says he has just heard from his office in New York and they tell him General Goethals will not be back until Wednesday or Thursday. If the committee desires to close the hearings before that time, we may desire some one from his office to appear. Of course he has some very able engineers in his office.

The CHAIRMAN. Of course, the committee has been working very hard, and it is the desire of every member of the committee that we get through with these hearings as speedily as possible. We will have to take up the hearings in executive session, and it will probably be a full week before we can agree on a report. It is very desirable that we get through with the hearings. If you can have a representative of General Goethals here on Monday we will hear him.

Mr. BUTLER. We will have a representative of his here on Monday.

The CHAIRMAN. We thank you very much for your candid explanatory statement. It has been very interesting. We will have no meeting to-morrow; we will meet again on Monday morning at 10.30 o'clock.

(Thereupon, at 4.30 o'clock p. m. the committee adjourned to meet Monday, March 6, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS.
HOUSE OF REPRESENTATIVES.
Monday, March 6, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF MR. FREDERICK E. ENGSTRUM—Resumed.

The CHAIRMAN. Mr. Engstrum, when we closed on Friday, Senator Butler said that you would be ready to go again this morning. He intimated you would have an engineer here from General Goethals's office in New York. I understand he has not come and therefore you would like to go on with the hearing?

Mr. ENGSTRUM. Yes, Mr. Chairman. I telephoned to our engineers in New York, General Goethals's office, and General Goethals's colleagues or his engineers there did not feel they would like to step in front of the General in this matter because he personally was more familiar with it, having built the old canals down at this point and having been stationed at this point, and being thoroughly familiar with the project, more than any of the other engineers in the office. The General is returning from the coast and will not be back in the New York office until Wednesday night. He could not be here until Thursday. I regret very much we can not have his testimony unless we could have it transcribed and transmitted to the committee as a matter of a letter later on, in case the hearings were closed. We want to give all the information to the committee that we can and do not want to inconvenience the committee or keep them waiting in any respect. For any delay on our part we will have to bear our own responsibility.

I would like to make a short statement, Mr. Chairman, regarding the offer which we presented on Friday. I believe that Senator Butler presented it very clearly. He presented it in almost every particular we had considered before the presentation, and there is very little I can add to his explanation. I would like to say in this respect that we have here two nitrate plants, one

having cost $13,000,000 and the other $67,000,000, both of which can be put to work in a high state of efficiency for about $7,000,000, and the greatest dam in the world, partly constructed at a cost of $17,000,000, which will soon be worthless unless completed.

Obviously it is economy and good business to finish this dam in order to harness this great water power now going to waste and make it pull these two plants and produce the nitrates and the fertilizers for which there is a crying need that is nation wide. It is admitted that these things should be done, and that their accomplishment will greatly promote the general welfare. Indeed, such an accomplishment will do more than any other one thing to promote the success of agriculture, contribute to general prosperity, and absolutely provide for the national defense.

I submit that my proposal provides for doing these things in the most efficient manner, at the least possible cost, and also guarantees a most liberal cash return to the Government after the investment.

The testimony of Major J. H. Burns before the committee was taken very much into consideration in our analysis of the project, for the reason that Major Burns is considered throughout the entire country as the foremost expert on nitrate manufacture, and his consideration of the nitrate plant No. 1 was particularly along the lines of our proposal for the conservation of that plant, the remodeling of that plant, and bringing both processes into operation.

In considering our offer along the lines of the advisability of nitrate plant No. 1, if the committee feels that it is important to make any further expert investigation regarding this nitrate plant No. 1 and the practicability and economy which it will serve, we would suggest that further hearing of Major Burns on the subject might be of considerable practical interest.

I do not know of anything more that I have to advance in the way of explanation unless the committee has some questions that they desire to ask me regarding our offer that have not been touched upon.

The CHAIRMAN. As I understand your offer, you propose that the Government shall finance this thing entirely. You will simply act as a sort of agent to carry out the plans that the Government engineers were to put into effect, and will not put up any money in doing it, but will expect pay from the Government for doing your share of the work.

Mr. ENGSTRUM. That is practically correct, Mr. Chairman. The only return that we expect to get whatsoever is what we are able to conserve or to save from the excess power and the practical utilization of that excess power in utilizing the high-peak load, utilizing the secondary power to its utmost advantage, holding all of the power intact and keeping the standby steam plants available to make up the gap where the secondary power falls of, and the practical and economical usage of all of the assets which are there and which will be there upon the completion of the project, not offering to purchase any of the property, but all of the property remaining intact and in the ownership of the Government.

Mr. MCKENZIE. I would like to ask you just one question, Mr. Engstrum: Of course, any returns you might get under this proposition, in a sense, are prospective rather than definite, is not that true?

Mr. ENGSTRUM. Yes; absolutely prospective. They depend entirely upon the ability of our company to make a profit out of the excess power. It must necessarily depend upon the successful operation of the whole property, including the nitrate plants.

Mr. MCKENZIE. It is speculative in a sense.

Mr. ENGSTRUM. Entirely.

Mr. MCKENZIE. I take it, however, that, in submitting the proposal, you have gone into this thing to some extent and have undoubtedly made some estimates. What estimates have you finally concluded would probably be a possible return to your company in case this project was carried out? What would be the annual return?

Mr. ENGSTRUM. As stated before, that is entirely speculative and would be only based upon the power that we would possibly be able to conserve for sale over the 1 mill—the 1 mill all going to the Government. This might be considered as a basis on which we would figure our compensation—a fraction of a mill averaging it throughout, taking the good, bad, and indifferent, and the high-peak load, and the moments when there would be no demand for the power, and the fraction would be a very small fraction of 1 mill which would come to the operating company.

Mr. MCKENZIE. However, in a sense, you would be in this sure position that, not having invested any money, if you did not receive any returns, you would not be out anything except, perhaps, some of your time?

Mr. ENGSTRUM. We would be out considerable expense of organization and expert service, which we engage and pay for. We would be out our engineering compensations.

Mr. MCKENZIE. Viewing it from your standpoint, is it not what we might term a rather "safe bet"?

Mr. ENGSTRUM. Yes; we tried to make it safe.

Mr. MCKENZIE. Yes.

Mr. ENGSTRUM. We did not want to take any element of chance——

Mr. MCKENZIE (interposing). I do not ask that question in a spirit of criticism.

Mr. ENGSTRUM. No; we tried to make it safe.

Mr. HULL. Mr. Engstrum, this may be a little outside, but you said you were building ships for the Government now.

Mr. ENGSTRUM. We are just completing the last contract. We had two contracts with the department.

Mr. HULL. Whom were they with?

Mr. ENGSTRUM. With the War Department.

Mr. HULL. With the War Department or the Shipping Board?

Mr. ENGSTRUM. With the Quartermaster's Department.

Mr. HULL. For what kind of ships?

Mr. ENGSTRUM. They were harbor-and-river-service vessels for serving the posts; a special type of small vessel—150-foot concrete vessels—with two Diesel engines. There is one of them here on the Potomac River, serving between here and Fort Washington. There is one in service on the Cape Fear River, between Wilmington and Fort Caswell. They are the most economical type of Diesel-engine vessels that is operating in this country to-day. They operate a 600-ton vessel, carrying 500 men, at a cost of about 1¼ gallons of crude oil per mile. That is almost as cheap as running an automobile.

Mr. HULL. How fast do they go?

Mr. ENGSTRUM. They run this trip from here to Fort Washington, which is a little over 12 miles, in about 50 minutes.

Mr. HULL. How many of those vessels did you build?

Mr. ENGSTRUM. We built seven of that type and three tankers to serve the various harbor vessels.

Mr. HULL. You are not building any seagoing vessels.

Mr. ENGSTRUM. No, sir.

Mr. HULL. And you did not build any?

Mr. ENGSTRUM. No; we did not build any seagoing vessels.

Mr. MILLER. Just one question, Mr. Engstrum. As Senator Butler said on Friday, your company is merely an operating company or exclusively an operating company?

Mr. ENGSTRUM. Yes.

Mr. MILLER. Now, what argument can we put forward from your point of view to our colleagues on the floor of the House on the principle of paying your company a 5 per cent cost-plus on the completion of that dam when we have our own organization composed of Army engineers ready to take hold of that dam and complete it without paying this cost-plus percentage to your company. What argument would you suggest to this committee to make to our colleagues on the floor of the House to overcome that suggestion.

Mr. ENGSTRUM. It is a well established principle, I think, that private contractors or private operators are able to do work cheaper than the Government. That has been my experience in contracting for 25 years and in handling it under private engineering we divide it up into what we consider the most practical divisions for the letting of the contracts. We prepare all the additional data necessary other than that which is already provided by the Engineers. The Engineers of the Government have very complete plans for the construction of the dams, but the plans which we will have to provide and submit to the War Department, with our engineers and experts, are regarding the revisions of the two plants. They have not yet been provided.

Mr. MILLER. I was limiting my question to the completion of the dam.

Mr. ENGSTRUM. Yes.

Mr. MILLER. Now, you maintain, do you, that the Government can complete that dam at less expense by the cost-plus method with your company than they could complete it themselves through the Army engineers.

Mr. ENGSTRUM. We would not call this a cost-plus method, Mr. Congressman. This method is not what is known as a cost-plus method, because in this 5 per cent, the overhead which always goes into the cost of a project, is under the plus, in this condition.

Mr. MILLER. The cost-plus was a misuse of the word on my part.

Mr. ENGSTRUM. It does not fit this occasion exactly.

Mr. MILLER. But what I am getting at is that you maintain you can take hold of that dam and by the Government paying you 5 per cent you can complete it under what the Army Engineers could complete it without the 5 per cent.

Mr. ENGSTRUM. I thoroughly believe that I can, in the light of my experience.

Mr. WRIGHT. Mr. Engstrum, you did some shipbuilding during the war for the Government?

Mr. ENGTRUM. The harbor and river type vessels I mentioned.

Mr. WRIGHT. How many did you say you built?

Mr. ENGSTRUM. We built nine of the early type during 1919 and we finished seven of the Diesel engine type during the year 1921, and we are just finishing the tankers which supply these vessels with their fuel, burning heavy oil.

Mr. WRIGHT. Under what character of contract was that work done?

Mr. ENGSTRUM. That was open bidding, awarded to the lowest bidder—a lump-sum contract.

Mr. WRIGHT. And you are now just completing that work?

Mr. ENGSTRUM. Just completing the service vessels, the tankers for carrying the oil.

Mr. WRIGHT. Did the contract turn out agreeably to you and to the Government? Was there any friction about it?

Mr. ENGSTRUM. There was not a particle of friction. The vessels were all tested and are performing more than was expected in the way of economy of operation and speed.

Mr. STOLL. Mr. Engstrum, you spoke of the overhead in your construction of this dam under the 5-per-cent clause; what is the overhead you refer to?

Mr. ENGSTRUM. The overhead is the accounting system necessary to carry on the business and the engineering companies which operate together with our company and all the expenses entirely outside of the lump-sum contracts which are let. All contracts will be let as lump-sum contracts. Now, to carry on those lump-sum contracts, all the other expense falls on the operating company.

Mr. STOLL. Your work will be solely seeing that the contractors do the work according to the specifications, will it not?

Mr. ENGSTRUM. Not entirely. We prepare in conjunction, certain specifications that are not yet completed, and submit and divide the contract into its various and most economical parts from excavation to the cribbing or the water work, and then into the concrete and machinery and the installation machinery, and all the various subdivisions which run into quite a large number.

Mr. STOLL. It would not run to anything like $1,250,000, would it?

Mr. ENGSTRUM. In the expense?

Mr. STOLL. Yes.

Mr. ENGSTRUM. The usual expense of the engineering fee alone, which does not cover all the operating expense of the company, is customarily 5 per cent on any engineering project, and you will see estimates all the way through providing in the cost of construction of these various projects the engineering fee, and you will notice that they are very large fees.

Mr. STOLL. But this is to be done under the plans of the Engineers of the War Department?

Mr. ENGSTRUM. The plans that are now completed, not the specifications which are yet to be completed, and the divisions of those specifications. It requires our engineers to take it up where the War Department has brought it up to this time, and in conjunction with the engineers of the War Department to complete the contract. Taking the expense over three years, I do not figure there is any profit to speak of. It is barely an equal proposition. If the Government desires to segregate that part from our contract, it would be agreeable to us, providing we see that the maximum amount of machinery installation is provided, because there is so much discussion regarding whether 200,000 kilowatts shall be installed or 416,000. In a 200,000 kilowatt installation, it would not make the operation of the plant profitable or possible or economical.

Mr. MCKENZIE. That is all, Mr. Engstrum, and we are much obliged to you.

Mr. MCKENZIE. Is Mr. Levering present?

Mr. LEVERING. Yes, sir.

Mr. MCKENZIE. You may make such statement as you desire.

STATEMENT OF MR. J. H. LEVERING, WASHINGTON, D. C.

Mr. MCKENZIE. Mr. Levering, before making your statement, will you state for the record your business?

Mr. LEVERING. I am a civil engineer. I have been in the practice of the profession for over 30 years. My residence is in Los Angeles, Calif. I came here in connection with the power bill; that is, the Federal power act, and I got interested for some other parties in the Muscle Shoals project. I have been there twice as an engineer and have examined it very carefully and helped to draw up the present contract or tender that is made by Mr. Engstrum. However, the tender was changed, contrary to my judgment, and I feel that I ought to show this committee the effect of those changes. I could not conscientiously stand by the project now, and I do not believe the committee has yet seen the contract as I look at it.

Mr. Engstrum, first, wants a cost-plus contract. He lets the contract to a contractor whom he states will have to have 10 per cent; then he gets his 5 per cent on top of that, which makes it a 15 per cent contract, and that in itself is 15 per cent more than there is any reason to pay.

I was at Muscle Shoals when the Army engineers were placing 4,000 cubic yards of concrete per day in that dam, at a cost of less than $25,000; that is to say, less than $7 per cubic yard; and I do not believe that all the engineers in the world could do that work any cheaper or better than the Army engineers are now doing it.

Now, I want to say that 15 per cent would only be a starter for his profits. The chairman seemed to be a little bit uneasy about whether Mr. Engstrum was going to make any money or not, and I want to show where the money would come in.

"SEC. 21. STORES, STOCKS, AND EQUIPMENT.—All stores, supplies, equipment, including engineers' supplies, files, and instruments, and other loose personal property now on or about the premises, whether or not required for construction purposes, but not including subsistence stores, shall become the property of the lessee upon the execution of this contract."

He would then acquire $3,500,000 of property immediately upon signing this contract. That $3,500,000 would include the derricks, the engines, the motive power of that work, and if you let it to a contractor, he could sell it back to him at a cost of at least $5,000,000, or rent it to him. So that Mr. Engstrum would not be short of money anywhere during the construction.

I want to call attention to another statement. The alterations of the plant are estimated at about $7,000,000. Such alterations are to be made at the expense of the contract. There is a trust fund created of one mill for each kilowatt hour of current sold; the mill and the cost of the nitrates becomes a trust fund in the hands of the lessee to make up the deficit in the manufacturing of nitrates and also for the purpose of making the alterations from time to time in the plant.

Mr. MCKENZIE. Did you write that provision—did I understand you to say? Is that one of the provisions you prepared?

Mr. LEVERING. No. These are the ones they changed on me, and I came here to explain that to this committee, that I was not guilty of it. I knew it was known by the committee I had prepared the plan and I wanted to make an explanation.

When business gets dull with them all they have to do is to tinker with the plant and use up all the money in the hands of the trust fund. They do not have to do a thing about making nitrates.

I do not make any reflections upon these gentlemen; that is their idea of business, but not mine.

When the war was declared on the morning of the 6th of April, our family was my wife, my son, and myself, and between breakfast time and noon the boy enlisted in the Navy and I went out to help the Government for a dollar a year. I got the promise of a dollar a year but I have not got the dollar yet; I was to sell bonds. They made me vice chairman of the committee in Los Angeles, to sell bonds, and when I went around to the people that made a

sacrifice to get the money to keep the men in the field and keep them supplied with ammunition, I just felt it was wrong that this plant should be made the football for a lot of speculators, and I come here as an American citizen to protest against it.

Now, the construction plant would be owned, as I say, by the lessee, and he could let it out to his contractors; he might get 25 per cent more; you will have 25 per cent going to the contractor and engineer, and 25 per cent to the lessee for his equipment, which would make it break about 50–50; that is to say, if you give Mr. Engstrum $3, all his bond does is to guarantee that he will spend $2 and keep the other dollar, and you can look it over until your eyes are sore and you can not find any other responsibility under that bond. If he fails to keep that dollar the bonding company would be liable.

Now, Mr. Engstrum has no contract to sell that power and he tells you fairly and honestly that he has not. The Alabama Power Co. has a contract to sell that power if they can get it. All they have to do is to sit around and tell Mr. Engstrum what they will do, and he will have to hand it over to them. He will never have to make a pound of nitrate. Anybody who could go into that plant with a transmission line could control the sale of that power. He has no way of using it and would have to sell it, and there is only one bidder in that country for power, and that is the Alabama Power Co. I do not believe that this is an auxiliary of the Alabama Power Co. I do not claim that at all.

Now, I am going to make a personal explanation to this committee, and I hope you will receive it in the same spirit in which it is made. As foolish as this contract is, as absurd as I think it is, it is a better contract to-day than the Alabama Power Co. or the Ford contract.

Those contracts, if you examine them carefully, are about as bad as a contract could be; in fact, neither one of the three, in my opinion, is a contract. I am not a lawyer, but I do claim that neither of these three contracts raised to the dignity of a contract, but are simply well worded appplications for a hand-out.

I want to make this further explanation. As the Engstrum proposition was first drawn I thought it was an honest and fair one, and I do not say it is dishonest now, because the ambiguities are so plain that nobody could accuse him of trying to get anything under false pretenses. It is right out in print, but the proposition that I took up with the general contractors of America, one of their members, or several of their members, have now got a proposition that is in the hands of the printer and will be out in about two hours, and which will go to the Secretary of War, which I think will meet all the conditions that fail in the Ford, in the Engstrum, or the Alabama Power Co. offers. It will beat either one of them as a producer of nitrates at cheap rates and with less money to the Government. They are putting in quite a sum of the money themselves and they have taken care of it in a businesslike way.

I do not care to review the other two contracts—the Ford or the Alabama Power Co. I had nothing to do with them, but they are just about on a par with the Engstrum contract.

I thank you.

Mr. KcKenzie. Let me ask you this question? Will this new contract you speak of contain any element of chance to be taken on the part of the contractor?

Mr. Levering. They take care of their own power and they use their own power, and they take all the elements of chance. They put up a part of the money for the construction of the dam—their share of it. They start right. It will at least save the Government $20,000,000 over the Ford offer and $15,000,000 over either the Engstrum or the Alabama Power Co. offer in money. It is a business proposition. The men have been here for years and know a fair contract when they see it.

Mr. McKenzie. If I understand your position, in analyzing these contracts, the Ford contract is the worst one of all.

Mr. Levering. I believe it is.

Mr. McKenzie. And the Alabama Power Co. is second in iniquity?

Mr. Levering. Yes.

Mr. McKenzie. And Mr. Engstrum's proposition, while you think it is inequitable and unjust to the Government, you still feel it has some elements of virtue in it?

Mr. Levering. It has not so much harm in it; that is all. The fangs are not so long.

Mr. McKenzie. And you are quite certain it is a safe proposition, so far as the company is concerned?

Mr. Levering. Yes; so far as the company is concerned. Yes; it is all right for the lessee.

Mr. McKenzie. In other words, you have no apprehension about the company going broke?

Mr. Levering. Not at all.

Mr. Greene. I would just like to ask you a question—whether you took out burglary insurance before you began negotiations with these gentlemen?

Mr. Levering. I have known Mr. Engstrum all his life, and I do not think Mr. Engstrum has intended to rob the Government. He has been led by his friends, and they all hope to make some money. They have brought Mr. Goethals here to throw dust in the eyes of this committee—there is no question about it—or to try to, because the Government engineers are doing that work conscientiously and well. They have Hugh Cooper, of New York, who has made more dams than any of them, as their consulting engineer. There is no call for Mr. Goethals to change or perfect the plans.

Mr. Greene. You say you were in the employ or service of Mr. Engstrum?

Mr. Levering. I helped him on this matter after I came here.

Mr. Greene. Was it a matter of compensation and employment?

Mr. Levering. Well, to a certain extent.

Mr. Greene. Was it a matter of compensation and employment. Were your services engaged by him?

Mr. Levering. I went to Muscle Shoals for him, and while there I spoke before the chamber of commerce and connected myself with the proposition, and I felt that after they changed it it was not fair.

Mr. Greene. I simply want to get at the question of whether you were engaged in the hire of Mr. Engstrum.

Mr. Levering. Well, I was to have a sort of working interest in the thing; that is all.

Mr. Greene. That does not answer the question.

Mr. Levering. Will you repeat the question, please?

Mr. Greene. Were you in the hire and pay of Mr. Engstrum?

Mr. Levering. He was paying the expenses; that is all.

Mr. Greene. Was this a voluntary association on your part, in the sense that you went and tendered your services, or did he seek to engage you?

Mr. Levering. I think I brought the matter up to him. I thought there was a chance there to get a good contract.

Mr. Greene. Have you ever had any definite sundering of your relations with Mr. Engstrum?

Mr. Levering. After we talked with Mr. Weeks, and I left Mr. Weeks's office and I thought everything was satisfactory, when I got to their office and found these changes were made I dropped them right there.

Mr. Greene. Did you drop it or did Mr. Engstrum drop you?

Mr. Levering. I dropped it. I walked out of the office.

Mr. Greene. Was there anything coming to you from Mr. Engstrum?

Mr. Levering. I would say not. I guess not. No; I am through with it.

Mr. Greene. All right; so am I.

Mr. Hull. You have told us about the iniquities of the Engstrum contract, and you have said that the Ford contract was worse.

Mr. Levering. I think so.

Mr. Hull. Will you, in your own words, explain to us in what way the Ford contract is worse than the Engstrum contract?

Mr. Levering. I would like to ask you if you will allow me to get the Ford contract and read it over again and return after dinner, and then I will go into it again carefully?

Mr. Hull. You have read it, have you not?

Mr. Levering. Yes; but I could not refer to it as thoroughly as I could if I had it before me.

Mr. Hull. We can give you a copy of it.

Mr. Levering. But I would have to go over it and fix the places, and I will be here after dinner again and will explain it to you.

Mr. Hull. You need not come back, but simply put it in the record.

DEFECTS IN THE FORD TENDER.

1. It limits the production of nitrates to the present capacity of plant No. 2, which does not produce fertilizer compounds. Should the plant be refitted to make fertilizers it could meet but a small part of the demands.

2. Plant No. 2 will consume most of the primary power of Dam No. 2. To provide for the interest, sinking fund, maintenance, and other charges it will be necessary to build Dam No. 3 on the site owned by the Alabama Power Co. This is an uncertainty and may require years of time and large expenditures.

3. The Ford tender is "in whole and not in part." The burden of construction rests on the Government. This, with the delay incident to the litigation now in prospect, leaves but one dependable feature in the tender; that is, Mr. Ford will be given $16,000,000 worth of property for $5,000,000.

The maintenance and renewal charges necessary to keep the dams in efficient condition should Dam No. 3 be built on present plans may exceed the allowance provided for interest, sinking fund, and maintenance.

4. There is no guarantee that the nitrate production will be increased to meet the growing demands. Should large industries be established there, to use the power, it would preclude further development of the nitrate plant. The Government, after bearing the burden of the investment and maintenance charges, would become a subsidiary of the Ford interests.

5. Have the Ford undertakings been such a success as to warrant the Government in irrevocably giving to them our one supply of nitrates that is essential to our agricultural interests in peace and may become vital to our national life in time of war? Henry Ford has made a success of light automobile construction. When he usurped the functions of Congress and undertook to adjust the rights of nations he made our country appear weak, impotent, and ridiculous. Was that a success? Does any one put faith in his promise of a 75-mile town? Or the Mississippi River dams? Or the self-propelling boats?

Mr. Ford has commenced operating a railroad. At the inception the Ford propaganda startled us with claims of enormous profits. Now we hear less of it. Mr. Ford may learn the railroad business, but so far his proficiency seems to be in ringing the bell and blowing the whistle. It is to be hoped that the noise will not mislead the Government. Would it be good business judgment to place our vital interests under the management of persons responsible for these visionary projects?

6. When the country decided to provide an ample and dependable supply of nitrates it wrote the final paragraph in our Declaration of Independence of all other nations. With this promise realized we could compete with the world in times of peace and defy it in times of war.

7. This great plant should be completed and kept in action, otherwise it will be a source of expense and soon become obsolete.

8. There are two contenders for the ownership of this public necessity—one a corporation controlled to some extent by foreign owners. This company, at a time when action was more important than language and when during the emergency of war the representatives of the Government depended largely on the support and patriotism of our citizens, secured a contract affecting the value of this project. I am impressed that the Alabama Power Co. should either modify its contract or meet the charge that it is an enemy corporation and its contract is against public policy.

9. The great dam across the Tennessee River distinguishes it as a permanent improvement, not a temporary war measure. The Ford tender asks for a deed to the greater part of this property and a perpetual lease for the remainder, for the avowed purpose of converting it to an automobile factory or other Ford uses.

The Alabama Power Co. ask it as a gift to make it a part of their light and power plant. Under the laws of Alabama they would be in a position to compel its citizens to pay interest on this large investment that cost them nothing.

SUMMARY.

1. The Ford tender requires the completion of Dam No. 3, which is uncertain.

2. It requires the Government to litigate the title to Gorgas steam plant and transmission lines before it becomes operative. This means delay and the ruin of nitrate plant No. 2.

3. The Ford tender does not provide for increasing the nitrate supply. The first right to the power would be vested in the Ford industries.

4. Under the tender the Government would bear the burden of maintenance.

5. This tender will cost the Government more than $50,000,000, and if Dam No. 3 is not successful there would be little chance of recapturing the property or amortizing the investment.

6. Mr. Ford makes this tender as a dear friend of the farmers, from whom he has acquired millions of dollars. Should he get possession of their fertilizer supply they will realize that he is the "dearest friend" they ever had.

Respectfully,

J. H. LEVERING.

Mr. LEVERING. All right; I will do that; but I don't want it to go in the record without somebody to answer me. I don't want to put anything over in the dark.

Mr. HULL. This is simply for our information.

Mr. LEVERING. Yes.

Mr. HULL. And I think we are entitled to have the information.

Mr. LEVERING. You shall have it, Mr. Hull, on any terms you say; but I want it understood that I am perfectly willing to meet Mr. Ford's people here when I make that statement. I am not trying to hide or put it in the record in the dark; but just as you say. I will do just exactly as you say. I am at your service.

Mr. HULL. We would also like to have your ideas about the offer of the Alabama Power Co.

Mr. LEVERING. Yes, sir; they are here, and I can go into that any time. I do not want to attack anybody behind their backs. That is the way I feel about it.

Mr. MCKENZIE. They have representatives here.

Mr. LEVERING. Yes; they have representatives here.

Mr. HULL. Well, give us your idea of the Alabama Power Co. offer.

Mr. LEVERING. Sure.

Mr. HULL. We want to have it all.

Mr. LEVERING. I do this at the request of the committee, of course. I am not volunteering it. Have you a copy of the Alabama Power Co. offer?

Mr. FIELDS. Here is a copy of their offer you may use.

Mr. LEVERING. Now, in the first place, to start in, the Alabama Power Co., under their proposition, take over the wires between Muscle Shoals and Gorgas. One of the essential things to work that nitrate plant is the quarry at Waco. There would be no chance to get power down there without you hired or bought the wires back again from the Alabama Power Co. That is one point. They would have your lime tied up forever.

Another thing is that the 100,000 kilowatts that they give you to operate your plant they take from you the right to go on that dam or make any repairs if it does not keep up to standard output; you can not help it. It goes under the jurisdiction of another department, under their offer, and this second 100,000 kilowatts would be worthless in a nitrate plant that was using the furnace method; now I want to explain to you in a little way about the manufacture of nitrates, and it will be very little, because I don't know but little myself; but there are two processes there, one is the furnace process or the carbide process and the other is the synthetic process. As a matter of fact the synthetic process is now the most satisfactory one to operate. The carbide process is practically out of date; but they leave you those two plants and they put in 250,000 horsepower and give you the second 100,000 horsepower, which you would get intermittently throughout the year. They say 82 per cent of the time. As a matter of fact, it would not be 82 per cent of the time, for this reason, that if the excess power was multiplied by the kilowatt-hour and divided by the number of months it would be about 82 per cent; but part of the time you will have more than 100,000 horsepower there. It won't start up just 100,000 and run even 100,000 for eight months and then stop; but it will vary, and a great deal of the time your plant will not be in full operation, not nearly in full operation, and at other times they will crowd that power on to you when you can not use it. The result would be you would have to have the employees there half of the time idle, and your nitrates would cost you more than it would be possible to sell them for. They will take that power, however, off your hands, because you can not operate the plant with it, and the result is that the plant will depreciate; that is, it will require all the returns from the nitrate plant to keep up the depreciation so that it would be impracticable, and you might as well—and it would be cheaper and better for the Government to include in the Alabama Power Co. offer a deed for the entire property. You will be out of it easier and cleaner.

Now, with that proposition, they would pay you for that 100,000 secondary power. I do not know what pay, but from Mr. Martin's testimony before the committee I imagine it would be a fair price, the same as he is going to pay for the plant at Gorgas. I think it would mean the building that dam under another jurisdiction, and possibly not as high as it is. There is another thing involved. If they finish No. 2 Dam at the present height exactly, they have got you tied up so they can not build No. 3 without doing business with the Alabama Power Co. again. The height of No. 2 would back up the water to practically where the No. 3 is designed to be built. In my opinion, that dam should be raised about 6 or 8 feet and the water driven back to a better location, but that would ruin the prospect of the Alabama Power Co. selling that dam site at No. 3, but the foundation is not good and it should be put either farther up or farther down the stream; but with Dam No. 2 built by them they would hold you so you would have to buy their holding for No. 3 at any price they could get for it, and if you do not build it, of course, they could build it themselves and get the extra power. It would be their power then, and not yours. For instance, it would then increase their primary power quite considerably, and if they did increase their primary power it would not increase yours. You would still have secondary power under their tender. There is no assurance there, if they increased their primary power, you would get any benefit of it, and they would then own the Gorgas plant, which is worth, I should say, five or six million dollars, the transmission line which you have practically built, and the steam plant at nitrate plant No. 2 which you have built. Those three plants would cost, well, in the neighborhood of $20,000,000. Then they have the $17,000,000 you have in Dam No. 2, which they take over, and they get at least $35,000,000 with which to finance themselves to finish Dam No. 2 and give them a power equipment that will pay interest on $50,000,000. That is to say, they talk about financing themselves; they are not financing themselves at all; the Government is financing them, just as much as they would Mr. Engstrum, because you are turning over to them property that you can go out into the market and borrow the money on to complete Dam No. 2, and it is not, in my opinion, a fair proposition. You might as well simply give them a bill of sale for the whole thing and let them have it, and you will save a lot of trouble hereafter.

Mr. FIELDS. Mr. Levering, how did you say you happened to come to Washington?

Mr. LEVERING. I was interested in a power project in California, and under the law we could not get any action, and this power bill was pending a long time, and I came here originally to help if I could, to see if we could not get the bill over. We got the bill over, but it was in such shape that it never has done us any good, but we got the bill over, however.

Mr. FIELDS. How did you happen to become interested in the Muscle Shoals proposition?

Mr. LEVERING. I made a set of plans, if you will remember, for the Government or for the power board for Great Falls, and while that was up I got interested in the discussion of that kind of work, and I went down and looked over Muscle Shoals. I knew the Government was going to stop the appropriation, and I thought maybe we could see if there was a chance to get some of my friends interested in the project, and maybe we could get to work, because that would not be built under the power act, and it was simply a straight business proposition.

Mr. FIELDS. And that was before you were connected with Mr. Engstrum?

Mr. LEVERING. Well, that was about the time. I talked with him often off and on for quite a while.

Mr. FIELDS. That was the trip you made at the expense of Mr. Engstrum?

Mr. LEVERING. He paid part of that expense; not all of it. There was another power company that paid part of the expense.

Mr. FIELDS. What power company was that?

Mr. LEVERING. The Arkansas Light & Power Co., an Arkansas corporation.

Mr. FIELDS. Have you been associated with any other power companies other than Mr. Engstrum in formulating plans for the lease of Muscle Shoals?

Mr. LEVERING. Not until after I withdrew from the Engstrum proposition. I had a talk with General Marshall, of the Associated Contractors, and he thought that it would be worth while to see some of their members who possibly were in a position to finance an offer in a businesslike way. I said that I felt I had done so much work on it I did not like to see it wasted, and we

finally made a proposition, and within a couple of hours it will be ready to be delivered to the Secretary of War. It is probably ready now.

Mr. FIELDS. And you will be interested in that proposition?

Mr. LEVERING. Yes, sir; and I want it up here and if there is anything wrong with it I want you to kick me out right away. I think I have covered the objections of the other three.

Mr. STOLL. Your principal objection to these offers is that you are not in on them?

Mr. LEVERING. No, sir; I am sure that these offers are not fair to the Government, and I would not go into any of them. I might if they were changed somewhat, of course.

Mr. STOLL. When did you get out with Mr. Engstrum—when Senator Butler got in?

Mr. LEVERING. No; Senator Butler and Mr. Engstrum and I all called on Mr. Weeks and we had what I thought was a fair understanding with Mr. Weeks. After we got back to the office Mr. Butler and Mr. Engstrum or somebody—I think it was both of them—changed from a lump sum to a cost plus and put in——

Mr. STOLL. I do not care for the details about that. You are not in on that contract now?

Mr. LEVERING. No; I don't want to be in with it.

Mr. STOLL. You are not in on the Ford contract?

Mr. LEVERING. Not at all.

Mr. STOLL. And you are not in on the Alabama Power Co. contract?

Mr. LEVERING. Not at all.

Mr. STOLL. And you are against all of those. Now, this fourth one you will be in?

Mr. LEVERING. Yes, sir.

Mr. STOLL. So you are for that?

Mr. LEVERING. Yes, sir; and I hope you will be, too, and I think you will when you see it. I think you will; I hope you will.

Mr. STOLL. From whom is it coming?

Mr. LEVERING. The tender is signed by Thomas Hampton, one of the largest producers of bauxite in the country. He has been selling his bauxite.

Mr. STOLL. Where is he from?

Mr. LEVERING. The deposits are in Georgia.

Mr. STOLL. Is it capitalized?

Mr. LEVERING. Yes; it is capitalized.

Mr. STOLL. I mean is your company going to capitalize?

Mr. LEVERING. I am not in the company. I am simply an engineer for them. They have business there and are established. Mr. Hampton is going to Texas; they have some oil fields; and he is going at 3 o'clock. I can bring him here between 2 and 3 o'clock if you want to talk with him.

Mr. STOLL. I do not want to talk with him.

Mr. LEVERING. They are business men and ready to put the proposition over.

Mr. STOLL. Who first drew your attention to Muscle Shoals?

Mr. LEVERING. The Muscle Shoals came up in the discussion of the Great Falls matter.

Mr. STOLL. And you drew Mr. Engstrum's attention to it?

Mr. LEVERING. I drew Mr. Engstrum's attention to it, I think.

Mr. STOLL. And now he has left you out in the cold. Did you draw this other man's, Mr. Hampton's, attention to it?

Mr. LEVERING. Now, I do not know that I did. Mr. Hampton was figuring on it. I have done Mr. Hampton's consulting work for quite a while. I think he spoke of it himself to me. I do not think that I did. He asked me if I had data enough so I could make up the estimates for him, which I have done. I have done Mr. Hampton's work off and on for more than a year.

Mr. STOLL. Who is in it besides you and Mr. Hampton?

Mr. LEVERING. I am not in it at all.

Mr. STOLL. Who is in it besides Mr. Hampton?

Mr. LEVERING. I do not know the names of the members of his association. I can find out for you and let you know at 2 o'clock.

Mr. STOLL. Did you not put him up to make the bid?

Mr. LEVERING. No; I talked with him about it just a few days ago. I think it was Saturday. Yesterday was the last time I talked with him, and we got the proposition in shape and sent it to the printer and had it printed, and we

are going to send it to the Secretary of War to-day. I am not a partner in the one that is coming. They have their own capital and their own organization. I was told by General Marshall, who had charge——

Mr. STOLL (interposing). What part do you play in it?

Mr. LEVERING. I was simply as an engineer to do this work.

Mr. STOLL. That is all, Mr. Chairman.

Mr. MCKENZIE. We are much obliged to you, Mr. Levering.

FURTHER ADDITIONAL STATEMENT OF MR. THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO.

Mr. MCKENZIE. Mr. Martin is present this morning and wants to make some additional statement, as I understand it.

Mr. MARTIN. Mr. Chairman, I will take only a short time, not over five minutes of the committee's time this morning.

I have been asked whether our company is interested in propaganda which is coming to the committee, for or against other offers, propaganda which is coming to Members of Congress for or against other offers. I have been asked whether any other company is interested in the proposition of the Alabama Power Co. in connection with this matter. I wish to state that our company is in no way concerned with or responsible for any propaganda of any kind which is coming to members of this committee or to Members of Congress, and that no other company engaged either in the power business or any other business is in any way interested in our proposition in th's matter, nor in any way concerned with any financing of our proposition; that it is solely and alone the proposition of the Alabama Power Co.

Now, I wish also to state that the papers contain resolutions which appear to have been adopted by college fraternities, by churches, by lodges, and by institutions which ordinarily are quite remote from matters of this k'nd, apparently interested in one of the pending offers; that is commonly called propaganda. I just want to mention that. It can not be otherwise than interested parties who are concerned in going nation wide and creating a situation. Our company has been in no way concerned in one or the other of those situations. In so far as its fairness is concerned, in some respects, I wish to direct the committee's attetion to one point. A telegram has appeared upon the committee's record which refers to the offer of the Alabama Power Co., and which refers to our company having obtained a lease on a steam plant by tricky methods, and then having set up rights.

The gentleman who sent the telegram was told that our company had presented a claim, or statement to this committee claiming the right to hold the Sheffield steam plant under a lease which was made by the Secretary of War last fall. I have stated to the committee in answer to direct questions, that our company has made no such claim, and the committee knows our company has made no such claim. The Secretary of War leased that particular steam plant under a lease which is subject to revocation at any time by the Secretary of War, and we recognize it. Our rights are solely in connection with the Warrior steam plant.

Nevertheless, Mr. Chairman, that very lease was made the basis of a newspapers story emanating from sources interested in one of the offers here, and was circulated as an attack against our company and formed the basis of the telegram to which I have referred. When the gentleman's attention was called to it he apologized for it, but said that the opinion was expressed by the man who took it up with him that he would not correct it, as the Ford supporters and the Farm Bureau people would not permit him to do so.

I mention that as an example of the propaganda which is based upon a misstatement of facts.

In so far as our obligations are concerned as a public service company and our relations to the whole matter, we stand on the record of our performance in Alabama and our development of water powers up to date and the distribution of power at fair and reasonable rates. Our relationships with the public in the State develop naturally—questions which we work out in due course.

That is all I care to state, Mr. Chairman.

Mr. MCKENZIE. If there are no questions any member of the committee desires to ask Mr. Martin, we are very much obliged to you.

Mr. MARTIN. Mr. Chairman. Mr. Frothingham wishes to make a brief statement in connection with matters related to our offer which is before the committee.

Mr. MCKENZIE. The committee will be glad to hear Mr. Frothingham.

STATEMENT OF MR. FRANCIS E. FROTHINGHAM, OF COFFIN & BURR, BOSTON, MASS.

Mr. FROTHINGHAM. Mr. Chairman and gentlemen, I wanted to make a statement about this whole situation as it appealed to me, because it has been my fortune to visit, in connection with my business, every State in the Union and Province of Canada; so I have had a particularly good opportunity to see and study hydroelectric propositions and public utility situations in general.

In doing so it has always been my effort to discover the facts, as far as I could, and to draw the deductions that seemed necessarily to follow from those facts so far as in my power lay, and I think I can safely say that nowhere in North America is there a hydroelectric situation where the possibilities in themselves are more interesting or where, if they are connected together, interconnected and coordinated in a complete fashion, they can perform a greater service to the public. If I may, I would like to draw a broad picture of this situation as I see it.

North of Florida the Allegheny Mountains parallel the Atlantic coast of North America throughout its entire length. These mountains run out into the lowlands in northeastern Alabama at their southwestern extremity. This is a very simple statement, but it is a fact that is directly responsible for the possibilities to which I shall refer. Off the flanks of the Allegheny Mountains flow many power streams, with many hydroelectric powers developed, but still with many opportunities left for development, but the powers on the streams that flow off of this southwestern flank of the mountains are the only source of hydroelectric power that are available for the entire State of Alabama, the entire State of Mississippi, western Tennessee, eastern Arkansas, and Louisiana. These are facts determined by nature, and I would like to indicate what these natural conditions are.

In prehistoric times the Atlantic coast was not where it is now, but was some distance inland. In those ancient times the coast of the Atlantic Ocean and the Gulf of Mexico followed a line which approximately to-day connects the headwaters of navigation of the navigable streams flowing into the Atlantic and the Gulf, and would roughly pass through these points, in the region of which I am speaking: Columbia, S. C.; Augusta, Macon, and Columbus, Ga.; then westward through Montgomery, Ala., and then, turning northward, through Tuscaloosa, Ala., and still north through Sheffield, and then in a wide swing to the north and west, crossing Tennessee, the Mississippi River, and returning to the Gulf some distance west of the present location of the Mississippi River. Those facts absolutely determine the conditions of which I am speaking.

On the sea side of that line, except for the navigable rivers of which I have spoken, there are no streams except of small size and very minor importance. There can be in this area no hydroelectric developments except very small ones at small falls on these local streams, which, in the aggregate, as against the powers we are speaking of, amount to nothing. Those are the facts as nature made them, and there is no hydroelectric power, speaking in general terms, in Mississippi, none in western Tennessee, none in Louisiana, none in eastern Texas, almost none in Oklahoma, and in Arkansas only a very small amount west and northwest of Little Rock.

That means that this entire region, if it is to have electric power, can only get it from these powers on the southwestern flank of the Allegheny Mountains. You have had a map laid before you, and if you will draw a circle with the center on Birmingham and a radius of 300 miles, it would include New Orleans, La., and Little Rock, Ark. Mobile is 200 miles away, and Memphis and Nashville are the same distance. The entire State of Mississippi is inside of that 300-mile limit. If these powers I shall speak of are coordinated and brought together in the only way that will enable them to realize to the maximum their potentialities, it will be possible for this region to be served from such a source, and I really think it will not be possible otherwise.

The three great power streams of Alabama are the Tennessee, the Coosa, and the Tallapoosa Rivers. It has already been explained to you that the Tennessee is a river of very rapid and extreme variations in flow, varying from a minimum at Muscle Shoals of something like 7,000 second-feet to a maximum of 500,000 second-feet. That means the number of cubic feet of water that passes a given point in the river in one second.

I might compare this river with a couple of other rivers that we all know. The Colorado River at Glen Canyon in northern Arizona has a drainage area of some 100,000 square miles. The Tennessee River at Muscle Shoals has a

drainage area of 30,000 square miles. But the Colorado River has a minimum flow of 3,500 second-feet and a maximum flow of only approximately half of that of the Tennessee. The Mississippi River at Keokuk, with a drainage area of approximately 110,000 to 120,000 square miles, has a minimum recorded flow of about 12,000 second-feet, and a maximum which is only three-quarters of that of the Tennessee. That means that the Tennessee River is chronically an irregularly flowing stream. From Knoxville to the Ohio River, with the exception of the falls at Hales Bar and at Muscle Shoals, the river is what is called a sluggish stream, and the topography of the country is such that there is no opportunity for reservoir capacities that relatively have any particular consequence. If you use the 7,000 second-feet of water in the Tennessee River over the head to be developed at Muscle Shoals you will get from 60,000 to 70,000 horsepower. But that is a misleading figure to use, because the average minimum flow of the river is not so small over a considerable period of time: the average minimum flow will produce from 100,000 to 125,000 horsepower. I am speaking now about continuous power. If the capacity of those stream flows is used in 12 hours of the day, instead of 24 hours, those figures would be approximately doubled. I think that shows that if advantage is to be taken of the power in the Tennessee River that is available for less than all the year, so that it can be available all the time, it must be supplemented by power from some other sources; you can not make use of the less than all the year flow of the Tennessee River otherwise.

This means that the Tennessee River is in itself, as an independently power-producing stream, disappointing and of very little availability.

The problem is how to make use to the advantage of the greatest number of people in all sorts of ways these less than all the year flows of the river, which amount to a great deal.

It so happens that on the Coosa and the Tallapoosa Rivers there are not only large hydroelectric development possible in certain places, but nature has so designed the topography of their drainage areas that there can be created exceptionally large storage reservoirs. That, in turn, means that if those capacities are tied together by transmission lines and in every way known to science interconnected, the greatest value that is in the Tennessee River may be realized. Under such an interconnected system as markets grow to demand its fullest power possibilities, the results are very impressive. Under such a scheme of full and complete development the Muscle Shoals plant might be developed economically to 500,000 or 600,000 horsepower, and the aggregate of hydroelectric installed capacity which might be created within a 90-mille radius of Birmingham is in the neighborhood of 1,500,000. And the Muscle Shoals power will have reached the full of its usefulness because it is one limb of a whole live functioning body.

Now, the problem is so to develop those capacities that they can be made progressively available in the most complete way possible. When I say one million and a half, gentlemen, I am mentioning an approximate figure, and I do not mean power that is available from hydroelectric sources all the time. No installations are made in that way. Power is used by the ordinary public less than all the time, and the storage reservoir and pondage capacities mean that the water may be held back during the night and used during the day; so the figures I have mentioned are the figures showing the approximate ultimate hydroelectric installation. But those figures can only be realized and full advantage taken of them if coordinated, as I have indicated, by some single agency. No combination of agencies can accomplish the equivalent results that a single agency can, if every advantage is to be taken of the diversity factor which such a combination can realize.

Now, by diversity factor I mean this—and I speak of it because it is an exceedingly important element for the public to take advantage of in its own interest. With a combined system widely scattered loads may be averaged, so that the average aggregate demand is much less than the sum of the individual demands. That means that there is less requirement for installation of power producing and distributing capacity and a correspondingly less investment to take care of that same business. It means also that the shortcomings of one source of power may be offset by the availability of another source, and that whatever power is generated at one source or another may find its way to the market by the most direct and most efficient route. That is applying the principle of load factor to all the various portions and to the whole of such a property.

Now, the Alabama Power Co. has been devoting itself to the development of these resources along these lines. Until the Alabama Power Co. brought money into the State and began work there was no money available for such a purpose. It is confining itself to the manufacture of power. The old adage says, "Shoeman, stick to your last." If you apply yourself to the manufacture of a single product you become proficient and expert at it; and this electric business is a most highly technical and highly specialized business. I think that I have, perhaps, misused the word power, and I, perhaps, should not have used it in this connection. I should have said, rather, that the Alabama Power Co. manufactures electricity because we think of power rather in connection with industrial uses. Electricity is a universal medium; it is used for many purposes. Wherever transmission lines or electric wires may go electricity is made available, and it can immediately be either used for light, heat, or for power. It is the same electricity that turns the 1 inch in diameter armature of a little motor that stirs the drinks in the soda-water shop and that turns the 10 foot in diameter armature of the 20,000 horsepower motor that turns the rolling mills of the big steel plants at Bessemer or turns the motors under the street cars. It is the same electricity that performs a thousand and one miscellaneous services of our everyday life, and which we can scarcely get along without. In the butcher shop it runs the meat-cutting and meat-chopping machine; in the grocer's, the coffee grinder. In our homes it is used in a thousand ways—to heat water, to warm the bathroom, to run the sewing machine, to run the washing machine, the dishwasher, to cook our food, to keep the fan going in hot weather. Its uses are so manifold and so widespread that they simply can not be enumerated. For the farmer the use of electricity is very important, in the difficulties under which he works. With electricity he cuts corn for his silo and relieves the onerous duties of farm life in many ways, to say nothing of substituting electric light in house and barn for the dangerous oil lamp and lantern.

And though not so large in amount as the power use, electricity is put to a much more important use in adding to community health and safety. There is nothing more effective as a health or police officer than electric lights in otherwise dark rooms and passageways and in the streets, alleys, and public places of towns, large and small. So the Alabama Power Co. is in the business of making electricity for general use and for needful service.

There are many towns, gentlemen, which, until the coming of this company with its service, never had any electricity, or had it for only part of the day. If any of these lines reach out in tentacle fashion into the country to a town, that town not only has service 24 hours a day, but it has it in unlimited quantities, and it can advertise for industry to come to it to increase its population and business—advertising it has an abundance of cheap power. It offers that town an opportunity to make the most of any location or other favoring condition it may have.

When this is said, I think it may go through the minds of some of you gentlemen that this is simply building up a great monopoly, and that monopoly is contrary to public policy. Let us look at that proposition a moment and see what it means.

I think when we think of monopoly we usually imagine some industrial concern manufacturing a product, and that it manages in some way to exclude everybody else and charge the consumer all the traffic will bear and we do not like it and we want to avoid it. And why should we? But does that condition apply in this case? Evidently and absolutely not. The Alabama Power Co. is carrying on its business, and will have to continue to carry on its business under public regulation, either the regulations of the State, of the Congress, or of the Federal Water Power Commission. There is no twilight zone between those jurisdictions; where one does not apply the other does. What does that mean? It means that that company is allowed to earn only a fair return on the money actually used in the public service.

That return anybody is entitled to. Who determines all those questions? The public authority. It determines what money shall be spent; whether or not it is right and proper to raise it at a given time, and what the rates for service shall be. As the Secretary of War has stated here "these regulating laws all provide for service to everyone without discrimination." That means, then, not that the Alabama Power Co. is building up a monopoly hostile to the interests of the public, but that the public has decided that it will regulate that monopoly in its own interests. In other words, that it will be the monopolizer and not the Alabama Power Co. or anyone else. It simply elects who it

will allow to run that business. And by doing so, and by allowing private concerns to conduct the business, it takes advantage of private initiative, which has been at the base of all the growth and prosperity that this country has experienced. The question is, how that private initiative can be harnessed in the public interest. The public decided, in effect, that it will monopolize this business, and it determines how it shall be run for itself. But, you may say, the law of Alabama requires that a certificate of convenience and neces sity shall be granted by the commission, after a hearing, before a competitor may engage in business in any town which the company is already serving. True; it protects the Alabama Power Co. or any other public utility from unfair competition. But in whose interest is that protection? It is in the public's interest, because the public has determined that it will not be subjected to the annoyances and the expenses of competition in a service so universal, necessary, and vital as this is. It will not stand for duplication of poles and wires in the streets, for two power stations, where one is sufficient, or for any other duplication of expense, all of which must, sooner or later, no matter how we may try to avoid it, be absorbed by the public.

May I illustrate the results of competition, by the experiences a number of years ago in La Crosse, Wis. Competition started against the local electric light company. As a result of it there was a reduction of rates and price cutting until the inevitable happened, and one company failed and the other took it over, and it got back again onto its feet by making charges and rates which would take care of all expenses. That company had scarcely gotten on its feet when there was another case of competition, with the same result. Then that company had hardly gotten under way again when there was more competition of the same kind. It happened four times in the city of La Crosse, and finally the Public Service Commission of Wisconsin rightly decided that when that sort of thing went on it was an injury to the city, and that the protection of the community required that a certificate of public necessity and convenience be secured before competition could be inaugurated. Now, so far as the public is concerned that simply stimulates private operation, because private management knows that if it does not perform its duties properly and competently, and some other agency can come into its territory and perform those duties better, the power of control which lies in the public will say that the other agency can do it.

In other words, I come around to this conclusion, that it is the public that controls the situation in its own interests absolutely, and that in allowing the Alabama Power Co., or any other private agency to make developments along the lines I have indicated, which insure the maximum of service at the least cost to the greatest number of people, they are taking advantage of private initiative to its own gain.

Now, may I touch upon one more point, and then I will be through. I take it that what the Government of the United States wants in connection with Muscle Shoals, leaving words aside for the moment, is that it shall be put to the maximum possible use in the best interest of the people, as it sees it. That maximum possible use, as I have very briefly tried to explain, can only be had if there is interconnection, full and complete, and every advantage taken of the resources available, so that no development will be made which only realizes part of the possibilities, and may be in the way of future and larger possibilities. The fact that the Alabama Power Co. can develop no hydroelectric powers without the consent of the Federal Power Commission or of Congress, insures that. Now, the Government has taken its position, partly as a result of its experiences in the war and partly realizing that the farming industry is at the base of our national prosperity. It has said that we want, first, to be sure that the power at Muscle Shoals is available for emergency in case of war, for the manufacture of nitrates.

Let us see how the Alabama Power Co.'s proposition answers that requirement. It leaves the nitrate plants and the quarry which supplies them in the possession of the Government, and it gives to the Government, free of cost, 100,000 horsepower, so that the Government not only has the plants which it has built for the production of explosives, but the free power with which to run them. And not only that, but if the Alabama Power Co. is allowed to finish the Muscle Shoals plant, it has started a great power system on its way so that as time goes on and the markets increase, there will be developed such an aggregate of power in that territory that in the event of war the Government will have more power available, because it has the right to reach out and take it, than it can conceivably use. In other words, as I see it, the Alabama Power Co.'s proposal answers that requirement of the Government 100 per cent.

The second thing that the Government wants is that Muscle Shoals shall be available for the manufacture of fertilizer. You gentlemen know that in the West, where water is scarce in the arid regions, the highest use of water is the irrigation use. The power use of water is second, and power permits are always granted subject to the superior rights of irrigation. In a similar way, if you choose, the Government wants to be sure that there is always power available for the manufacture of fertilizer. The Alabama Power Co. offer leaves the nitrate plant in the hands of the Government and provides 100,000 horsepower without cost to the Government, or to any other agency that the Government wants to specify, in its own discretion, to manufacture fertilizer, and the Government is at liberty to give any additional subsidy it cares to give beyond the 100,000 free horsepower to whomever it chooses to select as its lessee.

May I say in that connection, I doubt very much, having human nature in mind as I have seen it, if a manufacturer does not concentrate on the manufacture of fertilizer that it will be successfully done. If anybody manufactures fertilizer and also goes into the general manufacturing business, one or the other is going to be more successful, and the less successful business is bound to receive less attention and to fall by the wayside. In other words, I think the Alabama Power Co.'s proposal meets the second demand of the Government completely.

With regard to the balance of the power, so long as these two requirements are taken care of the Government is concerned only that the power shall be put to its maximum use for the greatest number of people over the greatest extent of territory possible. That can only be accomplished—and I say "only" advisedly, because the war has taught us that to squeeze the last bit of power out of existing power facilities there must be interconnecting transmission lines and every advantage taken of the diversity factors and the load factors I have spoken of—that can only be accomplished by opening the way for the possibilities in Alabama to be taken advantage of to their maximum.

The Alabama Power Co., by virtue of its experience, by virtue of the farsightedness it showed in working with the Government engineers, developed in conjunction with them a plan which was approved by them, for the development of Muscle Shoals, which would have been accomplished but for the intervention of the war, is in the best position to do this. The company is ready now to go on, as it might have done, had the war not intervened, and that power will be put to public use and service wherever markets require the extension of its lines in Alabama and within a radius of 300 miles, and gradually within a radius of 400 miles and more, bringing cheaper power to many communities than they could otherwise get. As time goes on and these facilities are coordinated, one after another, the result will be that the cost of production will inevitably come down. And as it goes down, the jurisdiction which the public authorities have over the operation of this company or of any other company doing a similar business, is complete and final, and limits that company to a fair return on the money which the public authorities have agreed, after investigation, is spent in the public service. So I think the power company in its offer to complete the work, without further cost to the Government, meets this demand of the Government for the most complete general use of Muscle Shoals, 100 per cent.

Now, gentlemen, I have tried to say nothing that I would not have said had I been a manufacturer, we will say, of broom handles, but with an interest in public matters and a desire to serve the common weal. But I happen to be a member of the firm of Coffin & Burr, a banking house in Boston, and, as I have indicated to you, my business is to keep in touch with these situations. I have studied this one thoroughly, and I pass along to you what seem to me to be the facts in the case and the deductions that must inevitably be drawn therefrom.

I thank you for your patience.

The CHAIRMAN. It is about quarter past 12 o'clock; to-day is unanimous-consent day in the House, and many of the members of the committee want to be present in the House for a while at least. Can you come back at half past 2 o'clock this afternoon, so that the members of the committee may ask you such questions as they desire?

Mr. FROTHINGHAM. I am at your service, sir.

The CHAIRMAN. If you can do that, we will appreciate it very much. We will take a recess until half past 2, and then the members of the committee will ask you such questions as they desire.

(Thereupon the committee took a recess until 2.30 o'clock p. m.)

AFTER RECESS.

The committee met pursuant to recess at 2 o'clock p. m.

STATEMENT OF MR. FRANCIS E. FROTHINGHAM, OF COFFIN & BURR, BOSTON, MASS.—Resumed.

Mr. FROTHINGHAM. Mr. Chairman, I wonder if I may have permission of the committee to add a word to what I was saying this morning that I did not quite get around to.

The CHAIRMAN. Yes; you may finish your statement.

Mr. FROTHINGHAM. I wanted to refer to another aspect of the proposition of the Alabama Power Co.

All through the congressional discussion which finally resulted in the Federal water power bill, in which it was determined that the Government should retain control over those hydroelectric powers and possibilities that in its jurisdiction in the public domain and on navigable streams, I was throughout in sympathy with that position of the Government. Many of my associates, or at least some of my associates, in the business, were not. I am not referring to anybody here, but to those with whom I generally come in contact. I think now all are agreed as to the wisdom of that policy.

The CHAIRMAN. How many months did it take to come to an agreement upon that policy? It was pending a long time in Congress, was it not?

Mr. FROTHINGHAM. It was a matter of several years, sir; and during that period the Government in very deliberate manner matured its policy with regard to the handling of the powers in the public domain and on navigable streams, and it deliberately, if I understand it, took the position of nongovernmental operation but of licensing to others the developments and uses of these powers under carefully laid down restrictions, among which were a grant of 50 years only with the right of recovery by the Government if it wanted to, and the development and operation under very carefully prescribed terms to be laid down by the Federal Water Power Commission, so that whatever was done under the bill was under the most careful and complete regulation, and I submit that the proposition of the Alabama Power Co. completely complies with that policy, and that if the war had not intervened undoubtedly this Muscle Shoals and the other Tennessee River proposition would now be included in the jurisdiction of the Federal Water Power Commission, so that all these matters would have come up before that body. So not only does the power company's proposition comply with that deliberately chosen policy of the Government, but under present conditions, where the utmost governmental economy is sought, the fact that the company completes the development at its own cost is no slight consideration.

The CHAIRMAN. Do you believe that that provision in the act of the 3d of June, 1916, which authorized the beginning of the water-power project and which contemplated that no private party should be joined with the Government in performing this work, would have been altered if we had not gone into the war?

Mr. FROTHINGHAM. My personal feeling is, sir, it would not have been brought forward if we had not gone into the war. I think it was entirely prompted by the thought that the Government must itself have control against any other during the emergency.

The CHAIRMAN. That was the reason, as I recall, why that language was put in.

Mr. FROTHINGHAM. That was my impression, sir.

The CHAIRMAN. But when we got into the war, of course, those outside companies were asked through our War Department officials to help the Government in carrying out these various provisions.

Mr. FROTHINGHAM. Yes, sir.

Mr. MILLER. Mr. Frothingham, your idea is that it is to the best interest of the people of the southern States that this Muscle Shoals property be given, or rather that the offer of the Alabama Power Co. be accepted.

Mr. FROTHINGHAM. Yes, sir.

Mr. MILLER. Now, you are looking at that from the standpoint or as one element—the stability of the securities of the Alabama Power Co.?

Mr. FROTHINGHAM. I think not, Mr. Miller.

Mr. MILLER. If you had no interest in the Alabama Power Co. and your firm had no interest, and you never expected to have any interest, would you have appeared here in the same interested manner that you have, Mr. Frothingham?

Mr. FROTHINGHAM. I should have been glad to, Mr. Miller.

Mr. MILLER. Of course, that is an old idea of dividing the country up and having certain localities where some interest is paramount and there are no competitors. We have that in the West and have had it for years, but, nevertheless, we are in this position, Mr. Frothingham: While the Alabama Power Co. has been in business in the State of Alabama, I think, in the neighborhood of 17 years, it has never improved the Muscle Shoals water power. Nobody has improved it. The United States Government has attempted to and did go ahead there. Now, after the United States Government has started in and put $17,000,000 into the enterprise, the Alabama Power Co. expresses a willingness to go and complete the enterprise, making use of the $17,000,000 that the Government has put in. That is the proposition, as I understand you.

Mr. FROTHINGHAM. Not at all, sir.

Mr. MILLER. Are you sure you have the Alabama Power Co.'s proposition correct?

Mr. FROTHINGHAM. I think so.

Mr. MILLER. And you say the Alabama Power Co. does not and will not absorb this $17,000,000 we have put in and get the use of it without paying anything to the Government?

Mr. FROTHINGHAM. Mr. Miller, is it permissible for me to answer these questions in my own way.

The CHAIRMAN. Why, certainly.

Mr. FROTHINGHAM. I think, Mr. Miller, you have asked several questions in one, so to speak.

Mr. MILLER. I did not intend to; I intended to ask that last question and I will ask the reporter to read it and see if there is more than one question involved.

(The stenographer read the question referred to as follows:)

"Mr. MILLER. And you say the Alabama Power Co. does not and will not absorb this $17,000,000 we have put in and get the use of it without paying anything to the Government?"

Mr. FROTHINGHAM. The Alabama Power Co., as I understand the situation, long before the war, took steps to see what could be done with the development at Muscle Shoals. Now, it is apparent, I think, that the amount of money involved before any power could be deliverable from the Muscle Shoals development was such that it was absolutely imperative, as a matter of business and sound progress, to make other power developments first, to load those developments and gradually increase the business which was available, until the time arrived when an expenditure of money on Muscle Shoals would make it possible for that expenditure to earn a return.

Now, in following that policy, which I think you will agree is an eminently sound policy, the Alabama Power Co. reached a point where it believed it could go ahead with that project, if it could get the necessary authority. That authority could only come from Congress at the time. There was no Federal Water Power Commission. The Alabama Power Co. studied this situation with the utmost care, in complete cooperation with the Government engineers, who represented solely the interests of the Government, and it was apparent to both parties that unless this development could be made in coordination with the others which I have spoken of, it was an impracticable proposition, but that in such coordination there was a basis on which the project could be entered upon, and accordingly, a report was made to the United States Government, as I understand it, in the hope that when Congress duly looked into it, it would give the necessary authority; and at that time the war intervened and everything took an entirely different course.

Now, the war has come to an end and the question is whether or not, as I see it, sir, the Government will revert to its former policies or whether it will not.

In the meantime the business of the Alabama Power Co. has grown so that by the time the Muscle Shoals project can be completed to the proposed installation, there ought to be a sufficient market to absorb its then output as a result of that expenditure, so that the undertaking will be financially successful and not financially a failure.

I wanted to make that statement, if I might, to answer your question that the Alabama Power Co. had done nothing; that the situation had been left unattended to, so to speak. The reasons, I think, are as I give them.

With regard to the $17,000,000, the original plan contemplated, as I understand it, that the Government would carry its portion of the expense or that

portion of the expense which had to do particularly with the capitalization of the river. I understand it is still asked of the Government that it shall do that.

Now, the exigencies of the war have carried the proposition as far as it is. If the Federal Water Power Commission gives authority to go ahead under such jurisdiction, the right of recovery exists, and when the right of recovery is exercised, that expenditure all returns to the Government, and if I understand the proposition, in the meantime, the 100,000 of free horsepower may be translated into terms of interest on that investment by the Government. Do I meet your question, sir?

Mr. MILLER. Then I understand that your answer to my question is in the affirmative, that it does?

Mr. FROTHINGHAM. Does what?

Mr. MILLER. Gets the benefit of the $17,000,000 we have put into the dam.

Mr. FROTHINGHAM. On paying interest for it; yes, sir.

Mr. MILLER. Where do they pay us interest?

Mr. FROTHINGHAM. I just said that if the 100,000 horsepower may be translated into terms of interest, the value of the power——

Mr. MILLER (interposing). That is not interest. Let us talk frankly. Let us not juggle with words. They are paying us no interest on the $17,000,000 that is already in the dam. Is not that the fact, under the offer of the Alabama Power Co.?

Mr. FROTHINGHAM. I think, sir, it depends a good deal upon how you look at it.

Mr. MILLER. You know what interest is, and I know what interest is, so let us not juggle with the word "interest."

Mr. FROTHINGHAM. And what is interest?

Mr. MILLER. You know what it is, do you not?

Mr. FROTHINGHAM. It is a return on an investment, and the return of 100,000 horsepower——

Mr. MILLER (interposing). Interest, according to its legal definition, is a certain amount of money paid for the use of money. That is what interest is.

Mr. FROTHINGHAM. Money or its equivalent, is it not?

Mr. MILLER. No, sir; there is no equivalent about it. There can be no equivalent inherently. Now, we have got $17,000,000 in the dam. The Alabama Power Co. gets the use of the $17,000,000 throughout the period of the 50 years that it takes this lease, and I am asking you if under the contract or offer of the Alabama Power Co. the United States gets any interest on its investment put in the dam?

Mr. FROTHINGHAM. Mr. Miller, I am not in the employ of the Alabama Power Co.——

Mr. MILLER. No; but you are interested in it.

Mr. FROTHINGHAM. I was not a party to the framing of that contract, and I came here to speak on the broad, general grounds of the whole proposition. I think Mr. Martin has answered that question or similar questions.

Mr. MILLER. I was simply asking the question of you, and if you do not care to answer it, Mr. Frothingham, of course, you need not.

Mr. FROTHINGHAM. I will say, with frankness, sir, my impression is that 100,000 horsepower has an equivalent money value, and perhaps I may be mistaken in thinking it, but I did think that that equivalent money value might be taken as an interest on the investment.

Mr. MILLER. It is not.

Mr. FROTHINGHAM. If you do not want to allocate it in that way in your mind——

Mr. MILLER (interposing). No; I would never allocate it in that way in figuring interest, and I do not think your banking firm does either.

Now, let me ask you this question about another angle of the proposition. I believe you said the flow of the Tennessee River was what—7,000 second-feet?

Mr. FROTHINGHAM. I said that I understood the extreme minimum flow had been 7,000 second-feet.

Mr. MILLER. How many horsepower will that generate?

Mr. FROTHINGHAM. Under the head to be developed, I think, between sixty and seventy thousand horsepower.

Mr. MILLER. Now, we get the second 100,000 horsepower.

Mr. FROTHINGHAM. Yes, sir.

Mr. MILLER. Then it is very clear that there is a part of the time of the year that the United States Government will get nothing.

Mr. FROTHINGHAM. Yes, sir.

Mr. MILLER. Now, what portion of the year, have you figured out, will the United Statse get no horsepower and no power whatever under the Alabama Power Co. contract?

Mr. FROTHINGHAM. The 100,000 horsepower of secondary power; that is, the second 100,000 horsepower, is a matter, I think, Mr. Miller, of exact calculation. That calculation is based on the records of the stream flow of the river as kept by the United States Government over a long term of years.

Mr. MILLER. Yes.

Mr. FROTHINGHAM. And those records show in a definite way that that second 100,000 horsepower is available 82 per cent of the time.

Mr. MILLER. Eighty-two per cent.

Mr. FROTHINGHAM. Yes, sir.

Mr. MILLER. Now, there is 18 per cent of the year, then, when we get no horsepower whatever under the Alabama Power Co. contract; that is, approximately, one-fifth of the year.

Mr. FROTHINGHAM. Mr. Miller, when I say that when it comes to that amount of power, I have no knowledge of the matter one way or the other, other than what has been stated, and I understood that there had never been any statement to the effect that there was required to operate the nitrate plants for fertilizer more than the first 100,000 horsepower of secondary power. Now, that is a matter for somebody else to discuss and to pass upon, and not for me.

Mr. MILLER. I fully appreciate that, Mr. Frothingham, but you are appearing here and recommending the offer of the Alabama Power Co.

Mr. FROTHINGHAM. Yes.

Mr. MILLER. And with just this little fundamental questioning we have developed the fact that there is approximately one-fifth of the year when there will be no power available.

Mr. FROTHINGHAM. Yes, sir.

Mr. MILLER. Which is quite a factor in the manufacture of nitrates or in the manufacture of anything else that has to have a steady outflow.

Mr. FROTHINGHAM. Except, sir, that those who have been studying these questions, and the Government officials, as I understand, have said that the second 100,000 horsepower was all that was necessary for the proper operation of the plant. Now, if they are mistaken——

Mr. MILLER (interposing). That is, the Government engineers have said so?

Mr. FROTHINGHAM. Do not let me make any mistake about that. I had understood that the technical experts who had looked into the matter had stated that the second 100,000 horsepower was sufficient for the purpose. If it is not, that is a factor, sir, that I have nothing to do with. I am not passing on that.

Mr. MILLER. I will just correct you a little about that. The experts have advised us that the nitrate plant No. 2 has an annual capacity of 110,000 tons of ammonium nitrate and that means running the plant to its full capacity 12 months in the year. Now, not 82 per cent of the time or 75 per cent or any other fraction of time, but that is the maximum capacity of the plant, run to its full capacity.

I realize, Mr. Frothingham, the same, as I think all of us, that we are all interested in the facility of financial investment. It all leads to the stability of our financial institutions, but very clearly, from your point of view, in the interest of the Alabama Power Co., you do not think it advisable for a competitor to get in the field down there.

Mr. FROTHINGHAM. Not at all, Mr. Miller.

Mr. MILLER. You do not think it is advisable?

Mr. FROTHINGHAM. I do not think, if I may so put it, that from our point of view, as bankers who have handled the securities, the bonds of the Alabama Power Co., that it will make any difference to the Alabama Power Co. whether this proposition is handled in one way or another.

Mr. MILLER. It will not make any difference?

Mr. FROTHINGHAM. What I think with equal sincerity is, as an American citizen who has studied these questions the country over, that the best interests of the public are served by putting that situation into the hands of the agency which is prepared and has demonstrated its ability to serve the public already. I am speaking in that respect in the public interest.

Mr. MILLER. Well, of course, if that philosophy is true, Mr. Frothingham, there is nothing in the philosophy of municipal or State enterprises, where municipalities develop their own water power and supply their own municipal needs.

Mr. FROTHINGHAM. My theory is based on the principle, Mr. Miller, that the greatest progress is made where private initiative is taken advantage of. That is simply my theory.

Mr. MILLER. I am quite familiar with that angle of it. I have been mixed up with it for a good many years and with all kinds of philosophies in that direction, but nevertheless if anyone should get this property besides the Alabama Power Co. it may be possible that there will be a competitor in the field down there, right in their territory, which you say would have no effect whatever on the securities of the Alabama Power Co.?

Mr. FROTHINGHAM. Pardon me, sir; I do not think I said that.

Mr. MILLER. I understood you to say that.

Mr. FROTHINGHAM. No; I said I did not think that the development of the Muscle Shoals situation by anyone other than the Alabama Power Co. would affect the Alabama Power Co. If there was somebody who went in in direct competition and some authority gave them permission to compete in every town and hamlet in which the Alabama Power Co. is doing business, there undoubtedly would be disturbance.

Mr. MILLER. Undoubtedly would be what?

Mr. FROTHINGHAM. Disturbance, but that is not a condition which I think it is fair to contemplate. There is in the State of Alabama a public-service commission, and it requires that a certificate of public convenience and necessity be secured before competition is allowed. That is a provision in the safety of the public, and I can not conceive, Mr. Miller, that the public would allow needless duplication of transmission lines, needless buiding of steam stations, needless duplication of expense, in order, deliberately, to injure an activity which has always been its good servant.

Mr. MILLER. Of course, that opens up another field. We are all acquainted with these certificates of necessity and these public utility corporations. Some of us have lived in States before they had them and after they have had them, and some of us have helped to organize them in some of the States.

Mr. FROTHINGHAM. I think better afterwards than before.

Mr. MILLER. Now, the Alabama Power Co. has a transmission line 88 miles long hooked up and lined up right toward one of the greatest consumers of electrical power in that whole locality, and that is the city of Birmingham.

Mr. FROTHINGHAM. Mr. Miller, the cost of distributing electricity after you have made it at the point of production is anywhere from two to three times the cost of generating it. Those things are all possible, surely, if anybody wishes, recklessly and improvidently to do something; but I am assuming that the Government will make its decision on what seems to me to be sound and helpful lines to the public it wishes to serve.

Mr. MILLER. The question is, What are sound and helpful lines? That has to be viewed from so many different angles.

Mr. FROTHINGHAM. That is it, precisely.

Mr. MILLER. I see very clearly, Mr. Frothingham, and so do you, and you saw it before I did, that if Mr. Ford's proposition should be accepted, and he should go in there and develop power and should sell his power, he would, in the first place, have an institution free from the financial government of the bankers; that is, his securities would never get on Wall Street or in Boston. He has enough money to put it in there himself. Now, suppose he goes to distributing power right in the same locality, granting that a certificate of necessity will be given by the State of Alabama, because we have had it before us that the Alabama Power Co. is a very unpopular institution in the State of Alabama, and so suppose that a certificate should be given him and he should enter into the distribution and sale of power in the very center now touched by the Alabama Power Co., we would have, first, an institution free from banker control of the large financial centers of the East; second, you would have a competitor right in the field competing against the securities you are interested in, and I can see very clearly why you would advocate that such a condition be not brought about, can not you?

Mr. FROTHINGHAM. Mr. Miller, I suppose that all sorts of things are possible.

Mr. MILLER. Let us figure on probabilities and not possibilities.

Mr. FROTHINGHAM. If Mr. Ford should go into that business, Mr. Ford would become a public utility.

Mr. MILLER. His company would.

Mr. FROTHINGHAM. And have to submit to the same regulation that the Alabama Power Co. does, and being a public utility Mr. Ford would have to go to the expenses in connection with such service, which he would be quite unwilling in all probability to go to. Now, the Alabama Power Co. or any other power company is in the business of collecting and distributing power in the most economical and the cheapest way, and if Mr. Ford should develop this project and should have power for sale cheaper than the Alabama Power Co. in that respect would not be injured by the existence of that power developed by somebody else; but, on the contrary, Mr. Miller, if I do not gauge it wrongfully, the public would be greatly injured, because, instead of retaining the monopoly control which it has over the situation as it is to-day, it would deliberately create a monopoly control as against itself in the hands of a private owner beyond the reach of governmental regulation, and I think that would be very much the graver of the two evils to the public.

And, Mr. Miller, you have spoken about—is it proper for me to ask Mr. Miller a question? I do not want to if it is not.

The CHAIRMAN. Does Mr. Miller want to answer the question?

Mr. MILLER. I have no objection. I do not know, though, that it is very interesting to the discussion. I have been over this so many times with different power companies and bankers and everyone else I think I understand all the angles to it. I would not hesitate at all to go into a discussion with the gentleman, but I do not know that it would be very beneficial to my brethren on the committee.

Mr. FROTHINGHAM. I wanted to ask you this question. Mr. Miller referred to the banker control. Could Mr. Miller tell me, please, what is the nature of the banker control that either Harris, Forbes & Co. or Coffin & Burr exercise over the policies or the operations of the Alabama Power Co.?

Mr. MILLER. Oh, I have no knowledge of that, of course.

Mr. FROTHINGHAM. I can tell you.

Mr. MILLER. But you say you are interested in that firm and you are here——

Mr. FROTHINGHAM. I can tell you exactly, sir. The Alabama Power Co. wants to get money for its enterprises, and it comes and sits down with Harris, Forbes & Co. and Coffin & Burr and says, "We want to do so and so; can we get some money?" and we ask them questions and discuss the matter, and we say, "We can get the money for you; but, in our judgment, market conditions are such that it may cost you so and so much." The Alabama Power Co. buys that money in that way, in precisely the same way that it buys a 30,000-kilowatt generator or buys the copper for a transmission line, and buys that money where it can buy it cheapest and get the best service; and that, sir, is the complete extent to which either Harris, Forbes & Co. or Coffin & Burr exercise any banker control over the Alabama Power Co. or any other public utility whose bonds we have distributed.

Mr. MILLER. Then your firm is simply a distributor of bonds, and not investment bankers.

Mr. FROTHINGHAM. The terms, I think, are foolish terms, sir. We are called investment bankers. We simply buy bonds with our own money and own them, just as a dry-goods merchant does the cotton on his shelf, and then sell them.

Mr. MILLER. And you deal in securities to the point of purchasing and selling them.

Mr. FROTHINGHAM. We deal in securities in the way I mentioned only, not as brokers.

Mr. MILLER. You subscribe to issues of bonds, do you?

Mr. FROTHINGHAM. We purchase them outright if we are satisfied that it is a good loan. We handle only bonds. We do not handle the equity securities of companies.

Mr. PARKER. Mr. Frothingham, these two plants, nitrate No. 1 and nitrate No. 2, both include steam plants, do they not?

Mr. FROTHINGHAM. There has been a steam plant built by the Government at Muscle Shoals. I do not understand the expression "both include steam plants."

Mr. PARKER. Well, there is a steam plant at No. 2.

Mr. FROTHINGHAM. In that vicinity.

Mr. PARKER. With a capacity of 90,000 horsepower.

Mr. FROTHINGHAM. Eighty thousand horsepower, sir.

Mr. PARKER. Eighty thousand horsepower or 80,000 kilowatts.

Mr. FROTHINGHAM. Eighty thousand horsepower or 60,000 kilowatts.

Mr. PARKER. Is there another steam plant at nitrate No. 1, a few miles down the river?

Mr. FROTHINGHAM. I believe not, sir.

Mr. MARTIN. Yes; there is a small plant there.

Mr. FROTHINGHAM. I was not aware of it; pardon me.

Mr. PARKER. This proposition proposes to leave those nitrate plants with the Government but to take over and to take away from those plants their steam power, does it not?

Mr. FROTHINGHAM. I should not have put it in that way. I did not so understand it. The nitrate plants must have power to run them, and the Government wants to be sure it gets that power.

Mr. PARKER. Yes; and the Government had a reserve for the time when secondary power failed in these steam plants; and the steam plants, I understand, this proposition proposes that the Alabama Power Co. shall take over.

Mr. FROTHINGHAM. I believe so.

Mr. PARKER. So as to take away from the Government their reserve of power for the operation of those steam plants when the water power fails.

Mr. FROTHINGHAM. May I say, again, I do not want to evade any question in any way that I am competent to answer or know about, but I am not familiar with the details of the nitrate situation. All I know is that I have been informed by those who are supposed to know that the second 100,000 horsepower was what was needed.

Mr. PARKER. I had not asked about the nitrate situation. I have spoken of a plant or two plants, each of which when running might use continuous power.

Mr. FROTHINGHAM. The plant at nitrate No. 1, if that is the one, is not concerned in this proposition at all, as I understand it. That is left with the Government just where it is.

Mr. PARKER. So is nitrate plant No. 2.

Mr. FROTHINGHAM. I am talking about the steam plant that is at nitrate plant No. 1. That is not concerned in this proposition at all.

Mr. PARKER. There is not much of a steam plant there. You take the steam plant away from nitrate plant No. 2.

Mr. FROTHINGHAM. Yes; if you consider that the steam plant at nitrate No. 2 and nitrate No. 2 are one and inseparable.

Mr. PARKER. No; I do not so consider them.

Mr. FROTHINGHAM. It is taken away from it in the sense in which you speak of it; yes, sir.

Mr. PARKER. Do you know anything about how intimately that steam plant is connected with nitrate No. 2, whether it is inside of the Government grounds or inside the Government's buildings, and so on?

Mr. FROTHINGHAM. I have been there, but I can not tell you that. The plant is physically separate from the nitrate plant but is connected with it by cables for the transmission of current through some sort of semiunderground conduit passageway.

Mr. PARKER. Your previous contract with the Government for the building of transmission lines did not cover either these plants or the steam plants in them?

Mr. FROTHINGHAM. No; it did not, because, may I say——

Mr. PARKER (interposing). I did not want to know the reason, but if you would like to give it——

Mr. FROTHINGHAM. That is all; pardon me.

Mr. PARKER. I did not mean to interrupt you.

Mr. FROTHINGHAM. I do not want to more than answer the questions; excuse me.

Mr. PARKER. And that agreement covered improvements which were made on the lands of the Alabama Power Co. only?

Mr. FROTHINGHAM. You are speaking of the installation at the Gorgas plant?

Mr. PARKER. Yes; that is the only previous agreement.

Mr. FROTHINGHAM. Yes; I believe so.

Mr. PARKER. That included the transmission lines and the original plant—the Gorgas plant—and nothing else?

Mr. FROTHINGHAM. I understand it included the 30,000-kilowatt unit at Gorgas, the necessary substation apparatus in connection with it, and the transmission line north to the Muscle Shoals plant.

Mr. PARKER. It did not include, did it, the delivery stations or the substations or power stations which were put on the Government property at Muscle Shoals?

Mr. FROTHINGHAM. I can not answer that question. Mr. Martin tells me it did not, sir.

Mr. PARKER. So that this new contract proposes that the Government shall transfer and not merely carry out the contract of transferring to you the plant and transmission lines on your own land, but likewise transfer other sections, delivery stations, and power stations on Government land.

Mr. FROTHINGHAM. As I had understood the proposition, sir, it was a proposition to acquire from the Government, for what was proper compensation, the rights to develop Muscle Shoals and its appurtenant property under a 50-year Federal water-power grant.

Mr. PARKER. I would like for the reporter to read the question.

(The reporter read the question referred to, as follows:)

"Mr. PARKER. So that this new contract proposes that the Government shall transfer and not merely carry out the contract of transferring to you the plant and transmission lines on your own land, but likewise transfer other stations, delivery stations, and power stations on Government land."

Mr. FROTHINGHAM. Yes.

Mr. PARKER. You do say that the Government had stations at which it could take power from the Gorgas plant or any part of the Alabama Power Co. for its own use in its own factories, and although it retains those factories it gives up those terminals?

Mr. FROTHINGHAM. Yes, sir; for 100,000 free horsepower.

Mr. PARKER. For 100,000 secondary horsepower, please?

Mr. FROTHINGHAM. Yes, sir; for the second 100,000 horsepower and $5,000,000.

Mr. PARKER. This power becomes therefore entirely second, instead of being backed up by a reserve of steam power?

Mr. FROTHINGHAM. Under the proposition, as I understand it, sir, the offer is the second 100,000 horsepower which is available 82 per cent of the time, and which I have been led to understand was what was required to operate the plant.

Mr. PARKER. And for that the Government gives up its reserve of steam power which would have hatched out this secondary water power?

Mr. FROTHINGHAM. If you choose.

Mr. PARKER. Is not that what you understand?

Mr. FROTHINGHAM. Yes.

Mr. PARKER. I do not mean to confuse you, but I am trying to find out what the contract says.

Mr. FROTHINGHAM. Pardon me for putting it in that way. What I had in mind was that the power which the Government would have, if it retained entire possession of the steam plant to supplement the hydroelectric power and maintained it idle for 82 per cent of the time, it would have to pay money to generate, and if it wants to buy it instead from the Alabama Power Co., it is there in superabundance. So that it would make little difference in the cost to the Government whether it paid the operating expenses of its own station to make it or bought the power from the Alabama Power Co. It would, in fact, buy it cheaper.

Mr. PARKER. There is no contract in this proceeding to sell power to the Government?

Mr. FROTHINGHAM. Not as I understand it.

Mr. PARKER. No. No proposition that it should be sold at the lowest wholesale rate.

Mr. FROTHINGHAM. I should assume——

Mr. PARKER (interposing). There is no such proposition in the contract. I asked a simple question. You did not see any such provision in there?

Mr. FROTHINGHAM. There is not, in the contract, but it is inherent, I think, sir, from the very nature of Government control.

Mr. PARKER. I doubt that, sir. I say there is no statement in that proposition that the Alabama Power Co. will reserve and be able to sell the Government enough power to make their secondary power primary power.

Mr. FROTHINGHAM. I recall no such statement.

Mr. PARKER. And that might be essential to the operation of the plants throughout the year.

Mr. FROTHINGHAM. No; I think not.

Mr. PARKER. That you do not speak of as an expert, you say?

Mr. FROTHINGHAM. Not as an expert; no, sir.

Mr. PARKER. You spoke of your general study of water power in the United States; how far has your study gone?

Mr. FROTHINGHAM. Coffin & Burr have handled bonds on hydroelectric properties all over the United States and in Canada.

Mr. PARKER. You spoke of the uncertainty of the Tennessee River and of other rivers of the Appalachian chain?

Mr. FROTHINGHAM. Yes.

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Mr. PARKER. This uncertainty does not exist to the same extent as to Canadian rivers, does it, where the rivers come from snow mountains?

Mr. FROTHINGHAM. Not as a rule, because the Canadian rivers of the East, particularly, come from a very extended region of bogs and muskeags, where the water soaks in and is naturally collected and runs off more slowly.

Mr. PARKER. And they have a better flow throughout eastern Canada than we have here?

Mr. FROTHINGHAM. I think that is so, sir; a more regular flow.

Mr. PARKER. Now, going to the West, where they have a very large flow in some of their rivers.

Mr. FROTHINGHAM. In Canada?

Mr. PARKER. Yes.

Mr. FROTHINGHAM. Oh, yes; some are very powerful streams.

Mr. PARKER. And some are very much more powerful than this river?

Mr. FROTHINGHAM. Yes, sir.

Mr. PARKER. How much more powerful?

Mr. FROTHINGHAM. I do not know that I could say exactly.

Mr. PARKER. Twice as great, some of them?

Mr. FROTHINGHAM. Oh, yes; and more than that. The St. Lawrence, for instance, has one million and a half horsepower at one place.

Mr. PARKER. I was talking of such rivers as the Ottawa.

Mr. FROTHINGHAM. I suppose the Ottawa River at its mouth might develop, perhaps, 200,000 or 300,000 horsepower.

Mr. PARKER. That would run during the year and not be so uncertain during the summer.

Mr. FROTHINGHAM. Not so uncertain, but still uncertain.

Mr. PARKER. Now, when you get west of the Rockies, into the Sierras, where there are snow mountains, take the Columbia, for example, is not that very much larger and much more certain?

Mr. FROTHINGHAM. No; it is not, sir.

Mr. PARKER. It is not?

Mr. FROTHINGHAM. Did you say the Colorado?

Mr. PARKER. No; the Columbia.

Mr. FROTHINGHAM. The Columbia is a very much larger river. I am not familiar with the maximum variation in its flow, but it is considerable.

Mr. PARKER. Has it not a larger flow in the summer than in the winter?

Mr. FROTHINGHAM. That is because of the melting of the snow in the mountains.

Mr. PARKER. Well, has it a larger flow in the summer?

Mr. FROTHINGHAM. It has a larger flow later in the year than most rivers. I do not know that it is largest in the summer or the spring or the fall.

Mr. PARKER. My information is that instead of being short in the summer it is overfull in the summer.

Mr. FROTHINGHAM. The snows melt in the mountains of British Columbia in the summer time and that flow comes down to the United States at that season of the year, and it has a peculiar flow record in consequence of that.

Mr. PARKER. And it has millions of horsepower?

Mr. FROTHINGHAM. There is a great deal of horsepower on the Columbia River.

Mr. PARKER. Has it not millions of horsepower?

Mr. FROTHINGHAM. My impression is that at Priest Rapids, on the Columbia, the estimates show there might be some 300,000 continuous horsepower.

Mr. PARKER. At that single point?

Mr. FROTHINGHAM. At that point.

Mr. PARKER. And there are many others, are there not?

Mr. FROTHINGHAM. Not a great many, sir.

Mr. PARKER. Now, as to the Sierra, I understand that the streams running from the Sierras, the snow mountains of Colorado, are not very large, but they have a tremendous fall, so that the amount of horsepower in many cases is very large.

Mr. FROTHINGHAM. Yes.

Mr. PARKER. And they have a summer flow from the melting of the snow, just as you have indicated.

Mr. FROTHINGHAM. Yes.

Mr. PARKER. And some of them are much larger in their horsepower than the Tennessee because they have thousands of feet of fall, is not that true?

Mr. FROTHINGHAM. I think I would scarcely say that, sir. The streams in the California mountains are in themselves of comparatively little hydroelectric consequence unless they can be associated with storage reservoirs, which will retain these intermittent flows. Some of the situations in California are such that with those storage reservoirs developed and with collateral streams which normally would not flow into the main streams diverted through tunnels into it and one thing and another of that sort done there are large amounts of power that can be developed.

Mr. PARKER. Your answer then is that when they come from snow mountains they do not have a strong summer flow at the very time that you need them.

Mr. FROTHINGHAM. I did not mean to say that. The flow comes at the time when the snow melts, whenever that is, and there is very apt to be, and there is, of course, in those streams a summer flow larger than the winter flow. In those streams the minimum flow is in the winter when the cold comes and they freeze solid and there is no water.

Mr. PARKER. Have you studied the water powers of the world at all?

Mr. FROTHINGHAM. Only in a very general way, sir.

Mr. PARKER. I suppose you will agree with me that on the Western Continent the greatest water powers of the world are within the Tropics, on the tributaries of the Amazon, as they flow from the Andes.

Mr. FROTHINGHAM. There are some enormous power possibilities in the Tropics, both in South America and in Africa.

Mr. PARKER. And also in India?

Mr. FROTHINGHAM. I am not familiar with India. I could not say. There may be.

Mr. PARKER. Have you ever heard of the fall of the Indus River of about 10,000 feet in about 50 miles—a large river?

Mr. FROTHINGHAM. I have not heard of that, sir.

Mr. PARKER. Or of the fall of the Brahmaputra River of the same sort?

Mr. FROTHINGHAM. I have not heard of it.

Mr. PARKER. Or of the fall of the Yangstekiang and other rivers of China coming also from those snow mountains?

Mr. FROTHINGHAM. Yes, sir; but those high falls are always where the river flow is small.

Mr. PARKER. Even when they come from those snow mountains?

Mr. FROTHINGHAM. Yes. Large fall and high heads do not often happen in nature together.

Mr. PARKER. Is that true where you have a large plateau like in Thibet, from which several large rivers flow?

Mr. FROTHINGHAM. Yes; but the individual rivers do not hold a large amount of water.

Mr. PARKER. You can not speak with certainty as to the amount of water in the Indus?

Mr. FROTHINGHAM. I could not answer as to that.

Mr. PARKER. You spoke of Africa. What part of Africa did you refer to?

Mr. FROTHINGHAM. I understand that on some of the inland streams there are some high heads.

Mr. PARKER. Do you mean in the south or in the north of Africa?

Mr. FROTHINGHAM. In central Africa.

Mr. PARKER. Where the Nile flows?

Mr. FROTHINGHAM. For instance from the Big Cataract to the Nile.

Mr. PARKER. Coming from the ruins along the Nile?

Mr. FROTINGHAM. Coming from the interior plateau.

Mr. PARKER. What we used to call the Mountains of the Moon?

Mr. FROTHINGHAM. Very likely.

Mr. PARKER. In Switzerland and in Italy, especially perhaps in Italy, the streams that flow from the Alps into the Po have tremendous flows with tremendous water-power possibilities.

Mr. FROTHINGHAM. They have very large flows, but not such tremendous horsepowers. You take the Po River. It lies in the valley bottom all across the northern portion of Italy, and its tributaries come down from the mountain sides, and each tributary is a comparatively small one, and when it is coupled with a high head and the possibility of storage, then a considerable power can be developed.

Mr. PARKER. Have you heard of their plans and the millions of horsepower they expect there?

Mr. FROTHINGHAM. I have, in the aggregate, understood that it was a great deal.

Mr. PARKER. How much do they figure on?

Mr. FROTHINHAM. I do not remember, sir.

Mr. PARKER. Many millions?

Mr. FROTHINGHAM. I do not remember, sir. It is very large.

Mr. PARKER. Then, I gather from you, if I am right, that while the Tennessee River is the best of our rivers in the Temperate Zone, in the eastern range of mountains, it is not large, compared with the rivers of the world, and is much more uncertain and smaller than the rivers either of Canada or the extreme West of the United States, and these are all smaller than the tremendous falls of the rivers of the Tropics.

Mr. FROTHINGHAM. In general, I should say so; yes, sir.

Mr. FIELDS. Mr. Frothingham, if I understood correctly your statement before noon, it is your contention or your belief that the power at Muscle Shoals will be necessary to meet the requirements of that section for the municipalities, factories, etc., which the Alabama Power Co. is now supplying.

Mr. FROTHINGHAM. I think I would say, Mr. Fields, that for several years to come the market requirements of Alabama can be taken care of without the use of the Tennessee River at all. It is simply a question of getting the Tennessee River harnessed as soon as market conditions make that a justifiable proposition in the public interest, and that time has come. In a few years it would in any case be demanded.

Mr. FIELDS. Would you apply the power produced at Muscle Shoals to the uses of the industries now supplied by the Alabama Power Co. entirely, to the exclusion of the production of fertilizer?

Mr. FROTHINGHAM. The Alabama Power Co. is an electric current making company. It does that business only, and it does not want to go into any other business, as I understand it.

Mr. FIELDS. Under your theory, there would be no water power in that section devoted to the production of fertilizer products, except the 100,000 secondary horsepower under the proposition of the Alabama Power Co., unless, perhaps, it is possible to successfully operate nitrate plant No. 2 with that power.

Mr. FROTHINGHAM. As the proposition stands at the moment, although, of course, should other development of the fertilizer business take place and additional power be required, I should be inclined to say that nowhere in the United States could it get more abundant or cheaper power than from a combination of these various resources which I have spoken of.

Mr. FIELDS. But you are making the production of fertilizer the secondary consideration and giving it secondary consideration. You would take care of everything first, and then, if there is power to produce fertilizer compounds, you would produce them, but you would not do so until all these other needs or requirements are supplied.

Mr. FROTHINGHAM. No; I think not, Mr. Fields. My thought was that the Government wanted to have this 100,000 secondary horsepower to operate the nitrate plants with, either for munition purposes or for the manufacture of fertilizer; and as I understand the proposition of the Alabama Power Co., it sets that aside as the primary claim of that business upon the capacity of the Muscle Shoals plant.

Mr. FIELDS. But, it being secondary power, that makes the production of fertilizer, when we come down to the meat in the coconut, a secondary proposition. The other is to be supplied first; and we make fertilizer, if we can do so, with secondary horsepower.

Mr. FROTHINGHAM. Perhaps my mind is confused about it, Mr. Fields, but I had understood—mind you, I have had no hand in working these phases out at all—but I have understood that what was wanted to operate that plant was the second 100,000 horsepower, and that that is being provided. Now, if that is not what is wanted, then, that is something which somebody else must take up and discuss.

Mr. FIELDS. This being the greatest water power in the Southeast and possibly the greatest one east of the Mississippi River in the United States, from my point of view, what is wanted is: First, the production of fertilizer compounds; and, then, if there is any available power, it might go to the other industries.

Mr. FROTHINGHAM. But, Mr. Fields, it is the greatest power in the Southeast only if it is coordinated with the other power and storage reservoir possibilities in the vicinity. Otherwise, it is of comparatively little value. That is the point which I would like particularly to bring out. That alone, as a separate proposition, unconnected in any way it is a comparatively uninteresting proposition.

Mr. FIELDS. But properly harnessed it is the greatest?

Mr. FROTHINGHAM. Properly harnessed it is the greatest single point of power production that there is in eastern United States, with the exception of the Niagara River and the St. Lawrence River.

Mr. FIELDS. You have stated that your institution sells the securities of the Alabama Power Co., I believe?

Mr. FROTHINGHAM. Yes; sells its bonds, sir.

Mr. FIELDS. If the Government should accept the proposition of the Alabama Power Co., now before the committee, that company would doubtless sell a great many more bonds, would it not?

Mr. FROTHINGHAM. Probably.

Mr. FIELDS. And your firm doubtless would get its share of the business?

Mr. FROTHINGHAM. We should hope, Mr. Fields, that if that condition came about, that Mr. Martin would ask us if we could supply the money, and we should try to supply the money; and, if we could not, Mr. Martin would seek for it elsewhere. But we have told Mr. Martin that we believe that in the face of what he has told us of the growing markets and the business which is expected to absorb the initial output of this plant when it is completed, that we believe his proposition can be financed and that we could probably supply the money.

Mr. FIELDS. In view of the interest you have manifested in this company, and the very forceful presentation that you have made here in support of his offer, he would be very ungrateful if he did not give you the business, all other things being equal.

Mr. FROTHINGHAM. I confess I might feel that way.

Mr. FIELDS. That is all, Mr. Chairman.

Mr. FROTHINGHAM. But, Mr. Fields, we are in the business of handling public utility bonds in the United States and Canada, and there is a good deal of business that we would like to get that we do not get, and if we did not get the business here we would get some other business.

Mr. FIELDS. That reminds me to ask another question. You are not expecting to handle any bonds for the development of Muscle Shoals if Mr. Ford should get it?

Mr. FROTHINGHAM. I can imagine that if Mr. Ford should come to us and offer us the right securities, and want to borrow some money, we would lend him money as well as we would anybody else.

Mr. FIELDS. Yes; but you are hardly expecting him to come.

Mr. FROTHINGHAM. I am not anticipating that; no, sir.

Mr. WRIGHT. Mr. Frothingham, are you acquainted with the water-power situation in Georgia?

Mr. FROTHINGHAM. A while ago I was intimately acquainted with it, although I am a little rusty now.

Mr. WRIGHT. What are the principal rivers of Georgia?

Mr. FROTHINGHAM. The power-producing streams?

Mr. WRIGHT. The principal power-producing streams; yes.

Mr. FROTHINGHAM. The Chattahoochee, the river which flows down the middle of the State, the Flint River, I think, north of Macon; the Etowah River, and the Savannah, or the upper tributaries of the Savannah, namely, the Tallulah and the Tugaloo. I think those are the major power streams in Georgia.

Mr. WRIGHT. Now, can you tell us the amount of horsepower being produced on any of those streams?

Mr. FROTHINGHAM. Only very roughly. On the Tallulah River there is a 90,000-horsepower development, I think.

Mr. WRIGHT. At Tallulah Falls?

Mr. FROTHINGHAM. Yes, sir; operating under one of the highest heads in East.

Mr. WRIGHT. That is a very splendid development there, is it not?

Mr. FROTHINGHAM. It is a fine development. On the remaining stream, the Tugaloo, I believe they are starting a development which is to have something of the same horsepower.

Mr. WRIGHT. And that is being done by the same company?

Mr. FROTHINGHAM. By the same company. I should roughly say that on the upper reaches of the Etowah there might be forty to fifty thousand horsepower in two or three developments.

Mr. WRIGHT. The Etowah is a wonderful stream, so far as waterpower development is concerned, is it not?

Mr. FROTHINGHAM. It is a very interesting stream.

Mr. WRIGHT. Do you know of any river in the United States which has more natural dam sites and places for power development than the Etowah?

Mr. FROTHINGHAM. The topography of the country in northern Georgia does provide reservoir capacities of importance.

Mr. WRIGHT. Now, about the Chattahoochee; how many developments are there on the Chattahoochee?

Mr. FROTHINGHAM. I am afraid I do not remember. The Stone & Webster people have a development just above Columbus.

Mr. WRIGHT. That is at Goat Rock, is it not?

Mr. FROTHINGHAM. Yes; I do not remember how large it is. I suggest about twenty-five or thirty thousand horsepower, although I may be 100 per cent wrong about it.

Mr. WRIGHT. There are about three developments right at the city of Columbus, are there not?

Mr. FROTHINGHAM. I think there are several developments or that there can be several developments made there. I have never studied it myself.

Mr. WRIGHT. Then there is one at what is known as Bull Sluice near Atlanta, Ga., on the Chattahoochee.

Mr. FROTHINGHAM. Is Bull Sluice on the Chattahoochee or the Etowah?

Mr. WRIGHT. On the Chattahoochee.

Mr. FROTHINGHAM. Perhaps it is. I do not remember.

Mr. WRIGHT. That formerly furnished the current for the city of Atlanta and operated their street railway, etc.

Mr. FROTHINGHAM. I had been under the impression it was on the Etowah, perhaps it is on the Chattahoochee.

Mr. WRIGHT. Then up near Gainesville there are two or three developments on the Chattahoochee.

Mr. FROTHINGHAM. I do not remember the details of that, sir.

Mr. WRIGHT. Mr. Frothingham, the water-power development on the Chattahoochee is just in its infancy, is it not? The river has not been developed?

Mr. FROTHINGHAM. I do not know, Mr. Wright, what the possibilities of the Chattahoochee River are. I have never had occasion to study them in detail. I do know it is one of the streams which takes its source in the Allegheny range and so is a stream that has water enough to have water-power possibilities. The extent of them I do not know.

Mr. WRIGHT. Did you ever hear of the site at Franklin, Ga., on the Chattahoochee River?

Mr. FROTHINGHAM. No, sir.

Mr. WRIGHT. That produces 100.000 horse power.

Mr. FROTHINGHAM. I have never heard of that.

Mr. WRIGHT. The point I am making is that the power is not nearly all developed in Georgia on these power-producing streams.

Mr. FROTHINGHAM. It is not nearly all developed on any of the streams that flow from the Appalachian Mountains.

Mr. WRIGHT. In other words, it has just commenced.

Mr. FROTHINGHAM. It has just begun.

Mr. WRIGHT. Do you think, Mr. Frothingham, that in the next 1,000 years there will be any dearth of water power in the Southeast, even if Muscle Shoals was eliminated entirely?

Mr. FROTHINGHAM. My vision has not gone as far as that. I have been thinking in terms of the more immediate present.

Mr. WRIGHT. You do not want to impress the committee with the idea that unless this Muscle Shoals proposition is developed—I mean the hydroelectric power there on the Tennessee River, and coordinated and interwined and interlinked with all the systems in the Southeast—that there is going to be a scarcity of electric current down there, do you?

Mr. FROTHINGHAM. Not in the immediate future, if the Federal Water Power Commission gives permits at other points.

Mr. WRIGHT. What you do mean to say is that the power at Muscle Shoals on the Tennessee River could be better utilized and the highest development could be reached provided it was coordinated with other systems throughout that section.

Mr. FROTHINGHAM. Not that it can be better utilized, but that it can only be utilized to its maximum by such coordination.

Mr. WRIGHT. In other words, you figure that the maximum could not be utilized unless it was coordinated with these other systems.

Mr. FROTHINGHAM. Not with economy. The maximum could be utilized by building steam stations sufficient to provide all of the secondary power that was necessary to offset a shortage in the stream flow of the Tennessee River, but that is an expensive way of supplying that shortage if you can get it cheaper from hydroelectric sources, as you can, in that region.

Mr. WRIGHT. But the point I want to get at is that if you eliminate the Muscle Shoals proposition and concede for the moment that every kilowatt that can be produced there would be utilized in the manufacture of nitrates there would still be enough water power in the southeast to supply the demands, so far as any human vision can now foresee, would there not?

Mr. FROTHINGHAM. In my judgment, there is power there, under those circumstances, to last for a great many years; but this, I think, is the thought in that connection: That it does not mean that in every locality there will be an abundance of power. There may be a shortage of power for one reason or another. There may be a shortage of power in Mississippi, for instance, that can only be supplied in some particular way. I refer to aggregate markets and aggregate supplies. I should not have said "A great many years," as I did just now, but rather as a few moments ago I said to Mr. Fields. That for several years the capacities of Muscle Shoals could be dispensed with, if other permits were granted. But the markets in the Alabama territory are growing so fast that in a few years Muscle Shoals will have to be called on and must be available. The wise plan is to incorporate it now and add the other opportunities later.

Mr. WRIGHT. I have just one other question. You have made a very interesting statement here, Mr. Frothingham.

Mr. FROTHINGHAM. Thank you, sir.

Mr. WRIGHT. You have been asked about the flow and the fall of different rivers, do you anticipate that the fact that the country may be denuded of its forests will decrease the flow of the rivers in that section and lessen the power.

Mr. FROTHINGHAM. It is not likely, probably, to decrease the total water that in the course of a year runs through the river.

Mr. WRIGHT. I understand that, but I mean the average of the year.

Mr. FROTHINGHAM. Some people have said that the absence of forests leads to atmospheric changes which result in less precipitation. Whether that can be borne out by facts or not I do not know, but the denudation of the hill slopes does result in a faster run-off of the water that falls.

Mr. WRIGHT. That is the point I had in mind. There is nothing left to store it.

Mr. FROTHINGHAM (continuing). Whether it falls as water or whether it falls as snow. It means, correspondingly, that there must be proportionately larger storages to accomplish the same results.

Mr. WRIGHT. In other words, when you leave the lands covered with trees and brush and leaves and undergrowth, the water instead of flowing off rapidly from a rainfall is largely stored there and flows gradually, but if the land is denuded of brush or growth or leaves, it flows off immediately.

Mr. FROTHINGHAM. There is not room for argument on that. If one looks up a hill slope the bottom of which is an open field, the open field has lost its snow when there are still signs of the snow up above in the forests.

Mr. WRIGHT. And the reason that the stripping of the country of the forests might affect the water power would be because it would cause the water to all flow off at one time after a rain and not gradually flow off.

Mr. FROTHINGHAM. It would make the erratic flow of the Tennessee River still more erratic. That is the effect it would have. Since we are speaking of that, one reason why the Tennessee River has such an erratic flow is that its headwaters are in the Allegheny Mountains, which is the region of the highest precipitation in the United States, outside of the mountains in the extreme northwest of the United States on the Pacific coast, so that the rain falls in great quantities and falls suddenly, and runs off in a corresponding way.

Mr. WRIGHT. Mr. Frothingham, you have also gone into the very interesting field of monopolies. Of course, you are familiar with the old adage that competition is the life of trade.

Mr. FROTHINGHAM. Yes.

Mr. WRIGHT. We Americans have always believed in that, have we not?

Mr. FROTHINGHAM. Yes.

Mr. WRIGHT. Now, if you carried your theory into all the different avenues of business, would it not relate just the same to a merchant as to a man furnishing water power. Of course, I understand the difference that we speak of railroad and water-power companies as being public utilities. They are quasi-public institutions, but suppose you adopt the same plan about the supply of foodstuffs of the people of the United States and provide that we will cut the country up into zones and the Government will take control, and anybody who wants to enter the mercantile field can do so, but they must do so under regulations prescribed by the Government. Under that arrangement, it would be better to have just one institution in each zone, would it not, so that you would cut down the overhead?

Mr. FROTHINGHAM. I would scarcely think so, because you are now getting into the field of miscellaneous private production on more or less a small scale.

I was speaking of a business in which the power resources, hydroelectrically speaking, are limited and defined by nature, and are only so many and so large, no matter who handles them. I think the element of competition is not altogether absent, because if the Alabama Power Co. or any other company does not so conduct its business as to give the community that best service that the community wants, the community will give that license to serve it to somebody else. So that the Alabama Power Co. has to bring to bear its individual initiative to hold its position; if it does not, it loses its chance.

Mr. WRIGHT. Your idea is that the public really controls these things?

Mr. FROTHINGHAM. Absolutely, sir.

Mr. WRIGHT. In the first place the commission controls the issue of stocks and bonds?

Mr. FROTHINGHAM. Yes, sir.

Mr. WRIGHT. And then it fixes the rates?

Mr. FROTHINGHAM. Yes; but that control of stocks and bonds is relatively immaterial. It is relatively immaterial how many stocks and bonds are outstanding on the property, from the point of view of public interest in it.

Mr. WRIGHT. It would have something to do with the investment, would it not?

Mr. FROTHINGHAM. No; it would have nothing to do with the investment, and it would have nothing to do, I think, with the rate of return on the investment, which the public would allow on the investment that is used in the public service.

Mr. WRIGHT. Why do you think it is wisdom; or is it wisdom, for the law to require that the issue of stocks and bonds shall be first determined by these commissions?

Mr. FROTHINGHAM. I think that may have grown up largely because before there was public regulation there were flagrantly large issues of public-service securities.

Mr. WRIGHT. They wanted to have the income on capitalization as expressed by stocks and bonds.

Mr. FROTHINGHAM. And also in the hope that they could put valuation in those excessive capitalizations. It is desirable, other things being equal, that there shall be a proper adjustment, and that the valuation on a property shall bear some close relation to the securities outstanding against it; but the point is that it does not make any difference to the public, because the public says, after examination that this concern serving the public can make such and such a return on the money which it actually uses in the public service.

Mr. WRIGHT. Do you think the public would fare better when there was just a threat of competition or when competition actually existed?

Mr. FROTHINGHAM. I think actual competition in these services is altogether to the disadvantage of the public.

Mr. WRIGHT. You think you would rather have the threat of competition?

Mr. FROTHINGHAM. I know that Mr. Miller, and very likely some other gentlemen, feel that I am speaking entirely from the standpoint of my special business, and my special desire to make a profit in it; but I have studied these problems for a long time as intelligently as I could, and looking at them from a public point of view, I am sincerely interested that the best public service shall be performed, and from that point of view alone it makes no difference to me whether a private concern or a public concern does the business; but I am sincerely convinced of the fact that as our institutions are run in this country, the privately managed concern, under regulation, secures through private initiative and close application to the problems involved, results that can not be gotten in any other way. Therefore I hold it is to the advantage of the public to have these concerns run in that manner.

Mr. WRIGHT. Do you not think that with competition there would be more of initiative and that the public would get the benefit?

Mr. FROTHINGHAM. Competion in this business is destructive, just as I pointed out this morning in the case of La Crosse, Wis. It multiplies investment needlessly and the cost has to be absorbed by the community in some way or other, whether it knows it and realizes it or not.

Mr. WRIGHT. Your idea is that it might be better to have one great central company to control the water power of every State, or, in all events, one central company in each section.

Mr. FROTHINGHAM. I should say there should be one in each section. There is such a thing as getting a business too large. Human capacity can best work within limits. Take, for instance, the American Woolen Co. The American Woolen Co. has grown to an enormous size and does a splendid business. But such size has its own limitations. No one man can in detail run all its mills. What happens is that the little independent woolen mill located up in Maine, or somewhere else, where individual application is at its best, can keep on running in competition with the American Woolen Co.

You want a unit so large that it will accomplish the economies you are after and still be within the comprehensive control of a single agency. When you get beyond that point you lose in efficiency. It is better not to have everything in one basket, but to have a basket large enough to accomplish the results desired. I think a basket large enough to hold the power possibilities I have mentioned in Alabama, where the problems are those of the coordination of similar resources sufficiently close together in distance, sufficiently tied together with regard to all the problems involved, one central agency, can do the work and accomplish the result better than scattered agencies. If you have scattered agencies you have to have intercorporate relationships. You may have a property and I may have a property, and you may want to buy current from me. We have to make a contract, and in the making of that contract we are going to stipulate certain things. You are going to demand conditions that you think will be of advantage to you, and I am going to stipulate certain conditions that I think will be of advantage to me. I am going to interpret that contract in my favor, and you are going to interpret it in your favor. That means that you can not get through such an arrangment the simplicity and the unity of control and use of the two facilities that you can get if one of us is running the whole thing. Do I make my point clear?

Mr. WRIGHT. Oh, yes. Let me give you an illustration along that line. Let us say that we live in a small town and there are two banks in that town, and the rate of interest is regulated by law. Anything charged over and above a certain rate is usury and is noncollectible. Each bank has a president and board of directors, and a certain number of employees, including a cashier and two or three bookkeepers.

Mr. FROTHINGHAM. But I am not a banker.

Mr. WRIGHT. But I want to give you this illustration. The heads of these banks and the stockholders determine that it will be more economical to merge the two banks, and that they could run one bank at practically the same expense at which they are running the two. They find that they could cut off all the overhead and other expenses of one of those banks, and that thereby they could make a great saving. Do you think it would be better for that merger to take place, so far as the public who deal with the banks is concerned, or should they stay in competition, with the increase in the cost incident to operating the two banks instead of one.

Mr. FROTHINGHAM. That depends, I should say, on conditions. I am not a banker, and I am not a student in the intricacies. But I should say that money is such an exceedingly liquid commodity in its flowing here, there, and everywhere that complete consolidation in a given community would be against the interests of that community.

Mr. WRIGHT. Although the rate is regulated by law?

Mr. FROTHINGHAM. I should say that was something that could not be regulated by law, sir.

Mr. WRIGHT. So there is something in competition, is there not, that pervades the whole of life?

Mr. FROTHINGHAM. I thought I have said there was; I think, indeed, there is.
Mr. WRIGHT. Finally, Mr. Frothingham, the consumer pays, does he not?
Mr. FROTHINGHAM. The consumer pays.
Mr. WRIGHT. If you maintain two transmission lines when one would do the work, the public pays for it?
Mr. FROTHINGHAM. Yes.
Mr. WRIGHT. That is true, in everything, is it not?
Mr. FROTHINGHAM. Yes, sir; and for that reason you want to keep the investment serving the public at the minimum, so that the consumer will pay as little as possible.
Mr. STOLL. Have you read all three of the contracts before this committee?
Mr. FROTHINGHAM. I have read two of them, the Ford proposition and the Alabama Power Co. proposition; I have not read the other.
Mr. STOLL. You think the Alabama Power Co. contract is the better contract?
Mr. FROTHINGHAM. Unquestionably.
Mr. STOLL. You look at that offer, Mr. Frothingham, from the standpoint of the development of the electrical power solely, do you not?
Mr. FROTHINGHAM. From the standpoint of putting the capacities of the Tennessee River to the greatest possible use in the interest of all the public within the reach of that power.
Mr. STOLL. Have you taken into consideration the fact that the development of Muscle Shoals was started by the Government primarily to make nitrates for munitions and to make fertilizer for the farmers?
Mr. FROTHINGHAM. I think so.
Mr. STALL. Have you taken that into consideration?
Mr. FROTHINGHAM. I meant this morning to point out why I thought the Alabama Power Co.'s proposition met that desire on the part of the Government.
Mr. STOLL. They do not undertake to operate those plants?
Mr. FROTHINGHAM. No.
Mr. STOLL. We would be taking two bites at the cherry, would we not, getting the power from the Alabama Power Co. and then would have to let other contracts to make nitrates for munitions or for fertilizers?
Mr. FROTHINGHAM. I think in taking two bites at the cherry, both cherries will taste a great deal better.
Mr. STOLL. We will have to go through the whole thing of developing the making of nitrates, or make different contracts with other parties.
Mr. FROTHINGHAM. I have a feeling, based not on anything I know, but based on experience, that if there is a demand for the manufacture of nitrates, with a situation as clean as a whistle, as it would be for an independent concern, expert in that business, to lease a plant from the Government and have 100,000 horsepower of free power, and with, therefore, a minimum demand for new capital that people would come forward to do that business, and if they did that business, and that business only, you would get more and better fertilizer made than you could get made in any other way.
Mr. MCKENZIE. I think we all understand that the Alabama Power Co. owned, or controlled, at least, the site of Dam No. 2 prior to the enactment of section 124 of the national defense act in 1916.
Mr. FROTHINGHAM. I understand so.
Mr. MCKENZIE. Had the Alabama Power Co., prior to that time, ever undertaken to interest your firm in the financing of that project?
Mr. FROTHINGHAM. Never, because it was premature. We have discussed the situation many times.
Mr. MCKENZIE. Since the enactment of that legislation, has there been any attempt on the part of the Alabama Power Co. to have you float its bonds?
Mr. FROTHINGHAM. The Alabama Power Co. has talked with us about it a good many times, and a matter of as recently as the middle of last year, or somewhat earlier, the money market was in such a condition and the rates were such that it was absolutely impossible to raise the necessary funds to put this project through as a private matter. But since that time conditions have so changed that that is no longer true, and it becomes possible to dispose of those securities.
Mr. MCKENZIE. After listening to your statement, in which I was very much interested, because I think you have enunciated some very sound principles, I have been wondering whether or not it is your belief, as a financier, a man engaged in financing various projects, that, standing alone, without being connected up in any way with activities in that region, the financing of the Muscle Shoals project would be one on which you would not look with favor.
Mr. FROTHINGHAM. Absolutely.
Mr. MCKENZIE. Do you give that opinion to the committee as your firm and fixed judgment, after careful consideration?
Mr. FROTHINGHAM. As a proposition of financing the Muscle Shoals dam as an independent situation would be entirely uninteresting to us.
Mr. MCKENZIE. Then would you agree to this proposition, that it can only be handled in one of three ways: First, to have the Government go ahead and construct the dams and then lease to someone; second, to permit some man or some corporation with sufficient funds in bank, such as it is alleged Mr. Ford has, to go ahead and complete the project; or third, to enter into a contract with the Alabama Power Co., or some other going concern in that locality, with which this project could be hooked up, and all operated together.
Mr. FROTHINGHAM. I think those are the three alternatives; yes, sir.
Mr. MCKENZIE. Of course, you stand for the proposition of the Alabama Power Co. as being the most feasible and best for the Government?
Mr. FROTHINGHAM. For the reasons I have indicated.
Mr. MCKENZIE. And for the serving of the general public?
Mr. FROTHINGHAM. Yes, sir.
Mr. MCKENZIE. If there are no further questions, we are very much obliged to you, Mr. Frothingham, and the committee will stand adjourned until 10.30 o'clock to-morrow morning, when we expect to hear Mr. Mayo again.
Mr. FROTHINGHAM. Mr. Martin calls my attention to the fact that Mr. Thurlow, the engineer for the Alabama Power Co., thinks that in a very few years these southern powers will be exhausted, and his judgment on that matter would be better than mine.
(Thereupon, the committee adjourned to meet to-morrow, Tuesday, March 7, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Tuesday, March 7, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.
The CHAIRMAN. Gentlemen, I have before me a letter from Mr. Hammitt, vice president of the Air Nitrates Corporation, in which he answers quite a number of questions that were asked him when he was on the stand. He stated at the time that he did not know but that he would look over the records and try to give us the information. I believe he has tried to do that; and if there is no objection we will put the letter in the hearings.
(The letter referred to follows:)

AIR NITRATES CORPORATION,
New York, March 2, 1922.

Hon. JULIUS KAHN,
Chairman Committee on Military Affairs,
House Office Building, Washington, D. C.

DEAR SIR: At the hearings before your committee on February 20 and February 21 I was asked to supply for the record certain information that I did not have available at the time. The purpose of this letter is to supply the desired information.
1. In the course of questioning regarding the relations of the Virginia-Carolina Chemical Co. and the American Cyanamid Co., I was asked for a statement of the men in the American Cyanamid Co. who own stock in the Virginia-Carolina Chemical Co. and the amount of stock owned by each. As I promised at the hearing, I have made inquiries of the executive officers and directors of the American Cyanamid Co. and have been informed that no one of them owns any stock in the Virginia-Carolina Chemical Co. except Mr. S. D. Grenshaw, who owns 10 shares. In this connection it is fair to state that the relations between the two companies are better shown by my testimony that the Virginia-Carolina Chemical Co. owns approximately 26 per cent of the stock of the American Cyanamid Co.
2. I was asked to supply for the record the date when Mr. Charles E. Hughes was retained by the American Cyanamid Co. to advise on questions relating to the form of protection that could be given the American Cyanamid Co. in connection with United States nitrate plant No. 2. This date was on or about May 15, 1918.

3. I was asked to supply the committee with a statement regarding the conduct of negotiations between American Cyanamid Co. (and its subsidiary, Air Nitrates Corporation) and the Government so that the committee might be advised as to who conducted those negotiations on both sides. On behalf of the American Cyanamid Co. and the Air Nitrates Corporation, these negotiations were conducted by Mr. Frank S. Washburn, president of both companies. On behalf of the Government they were conducted first by Brig. Gen. William Crozier, as Chief of Ordnance, and afterwards by his successor, Maj. Gen. C. C. Williams. Many conferences were held during the course of the negotiations, but no attempt was made to keep a complete record of these conferences. The contract of November 16, 1917, was negotiated for the Government by General Crozier and signed by Col. J. W. Jones. The contract of June 8, 1918, was negotiated for the Government by General Williams and signed by Col. Samuel McRoberts. Mr. Washburn and Mr. C. M. Grant signed the contract of November 16, 1917, in behalf of Air Nitrates Corporation, and the contract of June 8, 1918, was signed in behalf of Air Nitrates Corporation by Mr. Washburn and Mr. A. E. Bonn.

4. I was asked to verify for your record the list of employees of Air Nitrates Corporation who received compensation of more than $5,000 per year. As such list is published at page 3065 of the hearings before Subcommittee No. 5 of the Select Committee on Expenditures in the War Department of the House of Representatives, Sixty-sixth Congress, second session, volume 3, serial 6, parts 50 to 59 and 64 to 66, I find this list is correct.

5. I was requested to supply for your record the correct date and exact language of the statute referred to in article 21 of the contract of the Government with the Air Nitrates Corporation, dated June 8, 1918. This statute was by misprint referred to in copies of the contract before your committee as "Section 116 of the act of Congress approved March 4, 1919." The statute referred to was approved March 4, 1909, and the section referred to is as follows:

"SEC. 116. (Contracts to which two preceding sections do not apply). Nothing contained in the two preceding sections shall extend, or be construed to extend, to any contract or agreement made or entered into or accepted by any incorporated company where such contract or agreement is made for the general benefit of such incorporation or company; nor to the purchase or sale of bills of exchange or other property by any Member of or Delegate to Congress, or Resident Commissioner, where the same are ready for delivery and payment thereof is made at the time of making or entering into the contract or agreement." (35 Stat. L., 1109.)

The two preceding sections referred to in section 116 as quoted above are as follows:

"SEC. 114. (Member of Congress not to be interested in contract.) Whoever, being elected or appointed a Member of or Delegate to Congress, or a Resident Commissioner, shall, after his election or appointment, and either before or after he has qualified, and during his continuance in office, directly or indirectly, himself, or by any other person in trust for him, or for his use or benefit, or on his account, undertake, execute, hold, or enjoy in whole or in part any contract or agreement, made or entered into in behalf of the United States by any officer or person authorized to make contracts on its behalf, shall be fined not more than $3,000. All contracts or agreements made in violation of this section shall be void; and whenever any sum of money is advanced by the United States in consideration of any such contract or agreement it shall forthwith be repaid; and in case of failure or refusal to pay the same when demanded by the proper officer of the department under whose authority such contract or agreement shall have been made or entered into, suit shall at once be brought against the person so failing or refusing and his sureties for the recovery of the money so advanced. (35 Stat. L., 1109.)

"SEC. 115. (Officer making contracts with Member of Congress.) Whoever being an officer of the United States shall, on behalf of the United States, directly or indirectly make or enter into any contract, bargain, or agreement, in writing or otherwise, with any Member of or Delegate to Congress, or any Resident Commissioner, after his election or appointment as such Member, Delegate, or Resident Commissioner, and either before or after he has qualified, and during his continuance in office, shall be fined not more than $3,000." (35 Stat. L., 1109.)

Respectfully, yours.

J. O. HAMMITT,
Vice President.

The CHAIRMAN. This morning we have with us the representative of Mr. Ford, and we will be very glad to hear him.

ADDITIONAL STATEMENT OF MR. WILLIAM B. MAYO, CHIEF ENGINEER OF THE FORD MOTOR CO., DETROIT, MICH.

The CHAIRMAN. Mr. Mayo, will you kindly state to the committee any further communication that you may want to disclose to us.

Mr. MAYO. When I left here before, I stated that we would make a few alterations in the wording to clarify the meaning of our offer.

The first one that appears is in regard to the capital stock, in paragraph 1, line 2, after the parenthetical expression "hereinafter referred to as the company," we will insert "with a paid capital stock of not less than $10,000,000."

Mr. MILLER. Where does that come in?

Mr. MAYO. Right after the parenthesis. It comes after the word "company" in the second line of paragraph 1.

Mr. MILLER. Not less than $10,000,000?

Mr. MAYO. Yes; not less than $10,000,000.

Mr. HILL. What will be the exact wording of that change?

Mr. MAYO. With a paid capital stock of not less than $10,000,000.

Then in paragraph 14, line 2, there was considerable question, if you remember, in regard to the word "compounds," which appears after "fertilizer." We are striking out the word "compounds" and inserting before the word "fertilizer" the word "commercial," and we add the letter "s" to the word "fertilizer." It is in the singular and we make it plural. It will then read, "The companay agrees to operate Nitrate Plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other commercial fertilizers."

I believe the farm organizations are here with some requests as to changes, and we have had some talk with them.

Mr. QUIN. It occurs to me, Mr. Chairman, it would be a good idea to let these two gentlemen agree as to what changes they want to make without putting Mr. Silver on the stand, and let Mr. Mayo state them.

Mr. MCKENZIE. Are there any further suggestions you want to make outside of the one involved with the farm organizations?

Mr. MAYO. I do not think so.

Mr. MCKENZIE. If not, it might be well to permit the members to ask you such questions as they may feel disposed to ask you at this time in connection with the statement you have now made.

Mr. MAYO. All right, sir.

Mr. MCKENZIE. And having that in mind, I will ask Mr. Greene first if he desires to ask any questions.

Mr. GREENE. Mr. Mayo, have you given any further thought to the life of this proposed lease, a century period, whether Mr. Ford would be willing to come down to 50 years?

Mr. MAYO. He would not.

Mr. GREENE. Does he stand absolutely pat on the 100-year proposition?

Mr. MAYO. It seems so; yes, sir.

Mr. GREENE. Suppose we bring this proposition of yours out on the floor, and our colleagues ask us, "Why do you give Mr. Ford 100 years under the peculiar conditions attending his proposition, and yet everybody else operating a public waterfall under the law must subscribe to the period mentioned in the water power act of 50 years?"

Mr. MAYO. The answer is, it seems to me, that they all do not operate under a 50-year period.

Mr. GREENE. All that get Federal power do.

Mr. MAYO. Yes; but this we do not consider under the Federal power act.

Mr. GREENE. Why not? Because you are substituting your contract for it?

Mr. MAYO. Yes, sir.

Mr. GREENE. And I ask why should you have that advantage over your fellow citizens, under the law?

Mr. MAYO. We do not ask for any advantage. Mr. Ford has made an offer, and that is it.

Mr. GREENE. And it sets you up distinctly as a class who will occupy this relationship to the Government so that you will have a contract which will run for 100 years to utilize certain power, whereas other men utilizing Federal power are only permitted to contract for 50 years, and then only under certain terms and conditions, because they are restricted in the use of the power even at that.

Mr. MAYO. If I may suggest, this is in a different category, it seems to me. This is a combination of a water power and an industrial plant.

Mr. GREENE. In other words, you are going to plead here a public policy in the name of Mr. Ford which shall only apply to those having this lease and provides that the same possibilities shall not be open to other citizens of the land.

Mr. MAYO. This same proposition is open to anybody, it seems to me.

Mr. GREENE. Yes; if they get Muscle Shoals before you do.

Mr. MAYO. There is only one Muscle Shoals and only one project of its kind.

Mr. GREENE. I realized when I started my questioning that I could not get you to go back on your own proposition, so there is not any use to press that any further.

Mr. MAYO. Of course, the point at issue is that we consider the investment too large to take the risk for a 50-year period.

Mr. GREENE. I know that, but you are simply inviting not only class legislation but individual legislation, which sets your folks apart entirely from the rest of the people, under the law.

Mr. MAYO. I do not think so, because this is entirely a different kind of project from a straight water-power project. It is a combination of many things.

Mr. GREENE. It is a question perhaps of the difference between tweedledee and tweedledum, because it all implies water power, and the principle involved in the water power act was the conservation and use, under governmental regulation, of water power. They might make woolen underwear or they might make Christmas toys, it was the water power that was the gist of the thing, and what shall be done with the public water power, who shall have it, under what terms, and for how long. Now, everybody else has to some in under the 50-year period except you.

Mr. MAYO. Everybody else is treating it more as a water-power project, I guess.

Mr. GREENE. That is what this is.

Mr. MAYO. I do not think so. I think it is a coombination of the two. The investment in the industrial plant will greatly exceed that in the water power.

Mr. GREENE. If it were not a water-power project, then the position of Muscle Shoals would not be the particular crux of the whole matter.

Mr. MAYO. If the water power did not exist no project such as we have in mind could be carried out at all.

Mr. GREENE. Exactly. Now, it is a question of the regulation of water power and no amount of shading the meaning of words can change that, and so far as the Government is concerned the issue is, How shall we dispose of some water power, under what terms, to whom, under what regulation as to use, and we are met on the floor with the suggestion, "Everybody else, Uncle Sam, that you let have water power is tied right down to 50 years, and is under the regulation of the public service commission as provided for in this law, yet you propose to let Mr. Henry Ford have a water power for twice that period and under terms far more advantageous." What do you suppose other people are going to say about that?

Mr. MAYO. You are confining yourself, it seems to me, entirely to the water power.

Mr. GREENE. Because that is the basis of this contract.

Mr. MAYO. I do not think wholly so.

Mr. GREENE. If it was not, then you would not want to make the proposition.

Mr. MAYO. While that may be true, yet it is not wholly so, because if the nitrate plant and the war emergency plant were not there I doubt if Mr. Ford would have made the offer as it now stands, because the nitrate plant really is a part of the prime object.

Mr. GREENE. But they are run by water power.

Mr. MAYO. Exactly; but you are not treating the water power alone, because the other is hooked on to it.

Mr. GREENE. Of course, as we all know, you can fix up a little alcohol so it is not called alcohol when they sell it, but it turns out to be alcohol when you drink it.

The CHAIRMAN. If you will permit me, Mr. Greene, I think at one of the hearings, when you were not present, there was evidence brought in to the effect that the Keokug, Iowa, plant has a perpetual right.

Mr. GREENE. That was before the Federal water power act was passed.

Mr. MAYO. Hales Bar, on the Tennessee River, is for 99 years.

Mr. GREENE. But those other things were before the water power act was passed, as I recall.

Mr. MAYO. I think you are correct about that.

Mr. GREENE. We are talking about the law as it is now. Of course, I realize, as I have said, that there is no use wearying the committee with my importunities, because the man who proposes the contract can not be made to go back on his own offer. I understand that and I will not weary you any longer. I would like to again ask you if you have any construction to put upon that final proposition in your offer that reserves the right to use the power to the heirs and assigns of your corporation forever. Does that mean just exactly what it has been interpreted to mean here, that no matter what disposition the Government itself makes of that property, there still goes with it the right upon the part of your people forever to the first use of that power on terms to be agreed upon, and, of course, the terms may be enforced one way or the other; do you understand that gives you a right in perpetuam to that power?

Mr. MAYO. It gives us the preferential right at the same price you can get from anyone else. We do not have any advantage over anybody else in price or terms.

Mr. GREENE. No; the only advantage that amounts to anything is that you have the power.

Mr. MAYO. Yes, sir.

Mr. GREENE. And nobody else can take it away from you.

Mr. MAYO. Apparently.

Mr. GREENE. Now, what is your judgment, as a citizen, Mr. Mayo, as to the public policy involved in the United States Government giving any living creature the right to use this power in perpetuam, basing the contract on present-day conditions and the contract to run to our children's children and for all the generations hence?

Mr. MAYO. We think, under the conditions of this contract, we should have that preference. I do not know that that should apply to every kind of a contract. We have kept the war emergency plant in order for 100 years and we have invested a great deal of money, and any change in that that would so fix it that it is not possible to take the power right from under our feet would be agreeable, but we can not be left with a very large investment there and with no power; that is the point.

Mr. GREENE. It is very obvious that if Mr. Ford is as successful with this enterprise as he has been with others that at the end of 100 years the original investment at Muscle Shoals will have been returned more than once and nobody then owning the property or the lease would have ventured a dollar into it. They will simply be heirs to the thrift of the century before. They will wake up to find themselves owning something. Do you think it is altogether consistent with a proper public policy that looks to the future in the disposition of the Government's property and rights that we should mortgage our children's children's children to this proposition to-day when we have not the faintest idea what conditions will confront them, socially or economically?

Mr. MAYO. I do not see that you are mortgaging it in any way, because, after all, Mr. Ford has got to pay the same rate that anybody else would pay.

Mr. GREENE. But there is no competition if he does that. In other words, the proposition all runs against the Government and in favor of your people. In other words, the Government, again, can not choose its customer. The Government has something, but it can not choose the customer for it, because the very instant that you pay the price that the Government asks, as you will, nobody else who offers to pay the same price can have the property. You leave the Government in a peculiar situation. It may be that 100 years from now what your folks are making is by no means as desirable in the public interest as something which somebody else comes in with a tender to make, but Uncle Sam has to throw his hands up and say, "A hundred years ago they bound me to sell this power to these people, no matter what they made."

Mr. MAYO. I think Congress has the right to take it away at any time.

Mr. GREENE. It has the right to break faith, if you call it a right, but you do not urge that upon the Government as the only way out of what it finds to be a bad bargain when it went into that bargain with its eyes open.

Mr. MAYO. I think at the end of the contract period the Government will be able to get just as much out of that power as though it was a wide-open proposition and without a preference in the contract.

Mr. GREENE. It is not a question of money; it is a question of principle. We are not interested in the mere makeshift that might obtain in a bargain. We are charged with the custody of public property and we are interested in

the principle of government as a matter of public interest and public policy, as to what shall be done with it.

Mr. MAYO. Strictly, under the letter of the contract, we have a preferred right to negotiate upon such terms as may be agreed upon.

Mr. GREENE. But read the next sentence: "If the said leases are not renewed or the property covered thereby is not sold to said company, its successors, or assigns, any operation or disposal thereof shall not deprive the company, its successors, or assigns of the right to be supplied with electric power at reasonable rates and in amounts equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years."

That means something in English and it is plain enough on the face of it.

Mr. QUIN. Mr. Chairman, it occurs to me that this gentleman has declined to change that part of the offer, and we went over all that in the direct examination.

The CHAIRMAN. Of course, the statement that Mr. Quin makes, that we have gone into this thing on direct examination, is true, and if the witness is not prepared to make any alteration in that language, that is a matter for the committee to consider when the whole thing is taken up in executive session.

Mr. MAYO. What would happen at the end of the lease if you made a new contract on this wording: "Terms then to be agreed upon"? Say for argument's sake you made a contract for a year, at the end of the year where would you be?

Mr. GREENE. Mr. Mayo, you know that article 17 is divided into two sentences: The first one tells what you may do by way of negotiation, and the second one says that no matter what is done, however, this one particular thing, the right of your company to power, shall not be disturbed.

Mr. MAYO. But that is at the end——

Mr. GREENE. There are two propositions involved there.

Mr. MAYO. That is at the end of the period only, it seems to me, and then you have the right, so far as I can see, to furnish the plant with power from any source. You do not have to supply it from that particular source.

Mr. GREENE. That does not change the principle of the thing. That is only a change of the source from which the power might come.

Mr. MAYO. That is true.

Mr. GREENE. And it is binding and obligatory on the United States Government always to furnish the power.

Mr. MAYO. I am not a lawyer, but I am not sure you are right. It seems to me that at the end of the period you have the opportunity to make a new contract on terms to be agreed upon. There is no length of time stated for that contract.

Mr. GREENE. What, then do you mean by language that is as explicit and specific as this: "If the said leases are not renewed or the property covered thereby is not sold to said company, its successors or assigns, any operation or disposal threof—it does not make any difference what it is—shall not deprive the company, its successors or assigns, of the right to be supplied with electric power," etc.

Mr. MAYO. I know; but what are you talking about at all times?

Mr. GREENE. I am just talking about this language in the proposal.

Mr. MAYO. But you are talking about the end of the period.

Mr. GREENE. Yes; the end of the 100 years.

Mr. MAYO. Then, suppose you make another shorttime contract at that time, when that one would lapse, where would you be?

Mr. GREEN. This says that at the end of the period, no matter what other negotiations Uncle Sam proposes to enter into with respect to the disposal of this property, there is one thing he can not dispose of, or become free of, and that is the right of your people to that power.

Mr. MAYO. Yes; but saying that you make a new contract for another 10 years and then at the expiration of that 10 years, what?

Mr. GREENE. Unless your people surrender that right you can not make a new contract that will deny that right.

Mr. MAYO. But say you make a new 10-year contract with Mr. Ford at the end of the period for 10 years, then at the expiration of the 10 years, what?

Mr. GREENE. You have to make a new contract based upon conditions that exist at the end of the old one.

Mr. MAYO. I am not so sure about that.

Mr. GREENE. You have to take things as they are before you can change the contract.

Mr. MAYO. You have to take things as they are at the termination of the 100 years, but after another contract, I am not so sure about it.

Mr. GREENE. This provides that at the end of the 100-year period, that right to the use of the power is still maintained, no matter what other use is made of the property. I realize again that you can not get a man to go back on his own proposition, but I am simply placing this before you as one of the serious obstacles——

Mr. MAYO (interposing). And I am trying to justify Mr. Ford's position.

Mr. GREENE. I think there is a general disposition to look upon this proposition with the idea that if the Government can salvage its property and if the terms are reasonable and if, perhaps, the public benefit, such as the manufacture of fertilizer, is a part of it, there might be a very general agreement easily arrived at; but to hogtie the United States Government in this way and under these conditions, and to ask the Government in this form to subsidize your enterprise against all other private capital in the land, will make trouble on the floor, if this bill ever gets there. I simply leave that little suggestion with you.

Mr. HULL. Mr. Mayo, I was not here when you began your statement, and perhaps you have covered this, but to my mind there is a serious difficulty involved here. I am not saying how serious it is because I have not definitely decided in my own mind, and I presume none of the committee has, and that is in regard to the taking over of the Gorgas plant; the taking away from the Alabama Power Co. of this integral part of a plant of theirs. I do not think there is any question but what financially we would involve ourselves considerably in the matter. We might get by with that if there was only the financial side. However, there might be in the minds of the committee the question of the moral obligation. If we should decide we were morally obligated to return this property to the Alabama Power Co., of course, I do not suppose any of us would want to override that objection. Now, in case we should feel that way about it, is that an unsurmountable proposition with the Ford people? In other words, do they have to have that plant in order to make this contract? I will put it straight and frankly because we want to know about it.

Mr. MAYO. We have always considered it very necessary to supplement our primary power.

Mr. HULL. I understand that, and I can see that it is quite necessary.

Mr. MAYO. It is the first steam power available and the cheapest steam power that we would use.

Mr. HULL. But that is not answering the question. If we decide that we are morally obligated, I do not suppose there is any member of the committee who would want to override that objection. I think we are trying to be fair in this proposition, and I am not saying that it is my opinion at the present time that we are morally obligated, but there will come a time when we will have to decide that point, and when we decide it, if we decide that we are morally obligated to return this plant to the Alabama Power Co., then the question will come up, Will the Ford people consider this proposition at all without the Gorgas plant?

Mr. MAYO. Mr. Ford has never indicated he would consider it without that plant.

Mr. Hull, could I answer Mr. Greene's question further? Mr. Waldo has just showed me this pamphlet which has the water power act in it and it refers to what you were talking about. In section 15 it says:

"That if the United States does not, at the expiration of the original license, exercise its right to take over, maintain, and operate any project or projects of the licensee, as provided in section 14 hereof, the commission is authorized to issue a new license to the original licensee upon such terms," and so on.

Mr. GREENE. But that is optional and there is no intervening condition as there is in this proposition. There is no option left the Government here. The Government may dispose of its property and it may lease or otherwise contract that property at the end of 100 years, but it does so always subject to your right to have the power there. That is the way your proposition reads and that is the way the average man will read it.

Mr. MAYO. Do you think they can take it away from the original licensee under this language?

Mr. GREENE. Yes; they can. At the end of the time they can take it all away, but if they leave it, they leave it with them, which is a reasonable proposition under those circumstances. In this case, however, you have to take

it up from another angle. You offer us words and promises for our heirs but you take away all chance of our carrying out those promises. You say we can dispose of the property except the water power.

Mr. MAYO. If they take this property away, they have to pay for everything that the licensee has.

Mr. GREENE. I am not talking about the question of money but the question of principle and the question of the proper public policy, and what we shall do to our heirs when we are dead and gone for a good many years, and they are helpless about it. Once upon a time, in the development of our English-speaking jurisprudence, there was a revolt against this very doctrine of rule by a dead hand, which ruled living generations from the grave centuries back. Now, you are going to tie us and our children's children for centuries to your contract. I do not care to ask any further questions.

Mr. HULL. Is that all you wanted to say, Mr. Mayo?

Mr. MAYO. Yes; thank you.

Mr. HULL. Mr. Mayo, you have read Mr. Cooper's letter to the committee under date of February 21, I presume.

Mr. MAYO. I have not; no, sir.

Mr. HULL. Has not your attention been called to Mr. Cooper's letter in which he makes the statement that if we accept the Ford offer it will cost $1,275,000,000 over and above the amount of money received from Ford?

Mr. MAYO. I heard Mr. Cooper's testimony but I did not read the letter.

Mr. HULL. You heard the testimony along the same line, which was the same as the letter.

Mr. MAYO. Yes.

Mr. HULL. Have you had his figures analyzed?

Mr. MAYO. They appeared so ridiculous to me I did not attempt it.

Mr. HULL. The figures ought not to be ridiculous if you put them down and some one can figure them out, that is a mere matter of figuring. As I understand your proposition, you claim that you return the money that the Government will spend from this time on, with 4 per cent interest; is not that true?

Mr. MAYO. Yes, sir.

Mr. HULL. And he says that under your proposition you do not return it by $1,275,000,000.

Mr. MAYO. I know it.

Mr. HULL. Now, surely, there is some one who can figure that out and straighten that out and bring those figures together and tell us wherein he is wrong, if he is wrong.

Mr. MAYO. We can do that.

Mr. HULL. I should certainly like to have that done.

Mr. MAYO. We will do that and put it in the record, if you wish.

Mr. HULL. I would like to have that done.

(The statement referred to follows:)

Mr. Cooper's statement of the losses to the Government under the Ford offer is based upon the assumption that it is possible for the Government to collect compound interest on its war or other losses.

One does not lose that which one never had, and never had a possibility of having, and the Government does not lose interest which is not payable and never was payable, because no one has ever offered to pay compound interest to the Government on its expenditures.

On the other hand, Mr. Ford offers to actually set up a sinking fund for the benefit of the Government, and provide for the maintenance and administration of the fund so that all interest earned by the fund shall be reinvested for the increase of the fund. The higher the rate which the fund can be made to earn, the more quickly the Government's investment in the project will be amortized and refunded. He is not using compound interest against the Government, but for the benefit of the Government. There is nothing theoretical about this advantage to the Government, for the sinking fund is to be actually set up and the earnings are to be actually realized under his plan.

If we were to follow Mr. Cooper's method of figuring on Government losses, a compound interest that can never be realized, then we should do the same with Government gains. The Ordnance Department has indicated that 5 per cent of $47,000,000, or $2,350,000, is a reasonable measure of the annual saving to the Government through the assuming by Mr. Ford of the depreciation on the nitrate plant for 100 years.

If Mr. Cooper's statement is fair, then it is fair to assume that the Government should set aside this amount annually and let it draw compound interest at 4 per cent.

In 100 years this annual saving invested at 4 per cent would amount to the tidy sum of $2,908,183,750, and we have not included any item of Mr. Ford's offer, other than this one feature. We could add to the absurdity by including in the annuity the saving due to guarding, routine maintenance, etc., but it does not appear to be necessary.

Mr. Ford's payments under his offer will take care of the principal and interest of a 4 per cent bond issue without an appropriation by Congress, and we believe that the project can be readily financed on this basis.

Nitrate plant No. 2 will produce some 2,000,000 tons of completed 2-8-2 fertilizer, or somewhat more than 25 per cent of the annual fertilizer consumption of the United States. If Mr. Ford's economies result in saving only $15 per ton to the farmer, on only this amount of production the annual saving would be $30,000,000, and the saving in 100 years, without interest, would be $3,000,000,000.

Mr. JAMES. Mr. Mayo, in response to a question by Mr. Greene, you read a part of the water power act. Are you willing to strike out the language that you use in section 17 and use the language you read to the committee from the water power act?

Mr. MAYO. I could not say right off the bat. I will take it under consideration, however.

Mr. JAMES. I thought that was your explanation of what you thought your language meant.

Mr. MAYO. No; I simply brought that up. I never saw it before, but it seemed to me it was quite parallel. I will take it under consideration, though, and see.

Mr. JAMES. Mr. Mayo, when you were before the committee before, I said:

"Mr. JAMES. When the Judge Advocate General was before the committee the other day, the matter concerning the cost of the flowage rights came up, and he stated that Mr. Ford believed the Government could acquire those cheaper than anybody else, and there was not any doubt in his mind that Mr. Ford intended to reimburse the Government for those expenditures, and that when you appeared before the committee you would agree with his view concerning that matter."

Have you taken that up with Mr. Ford?

Mr. MAYO. I have, but he has not changed his views yet.

Mr. JAMES I understand that Mr. Worthington in his conversation with Mr. Ford had the impression that Mr. Ford intended to repay the Government.

Mr. MAYO. A little difference of opinion has existed on that, and we have not come to a conclusion as yet.

Mr. JAMES. Have you talked with him about it?

Mr. MAYO. Yes, sir.

Mr. JAMES. When you were before the committee before, and when Mr. Worthington was before the committee, I called attention or asked you if nitrogen could not be used for some other purpose besides manufacturing fertilizers, and you both said yes.

Mr. MAYO. Yes, sir.

Mr. JAMES. That being so, why not strike out the word "nitrogen," so that it will read, "the company agrees to operate nitrate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of fertilizer compounds."

Mr. MAYO. The nitrogen capacity of the plant was the reason for putting that in. Everything is based on its nitrogen capacity.

Mr. JAMES. Could we not put put in some language there by which the nitrogen could not be used for any other purpose except the manufacture of fertilizer?

Mr. MAYO. Does not this imply that it is for use for fertilizers?

Mr. JAMES. You say that nitrogen can be used for manufacturing something else besides fertilizers; and if that is so, there is no prohibition here so that you can not use it for any other purpose, no matter what you may intend to do.

Mr. MAYO. We might say nitrogen for fertilizer and other fertilizers. I think we could take care of that all right.

Mr. JAMES. That might make it better. Major Burns said this when he was before the committee in answer to a question from Mr. Hull:

"Now, over and above that he may or may not guarantee to run it as a nitrogen-fixation plant. I think you can interpret it very readily to the effect that he does agree to run it as a nitrogen-fixation plant."

Have you taken that up with Mr. Ford so the language can be changed, so that there will not be any doubt about it? Major Burns seemed to think there was some question about it, although he thought it might be construed in that way.

Mr. MAYO. Well, nitrogen is one of the component parts of fertilizer.

Mr. JAMES. If you will turn to page 209 of Mr. Burns's testimony, in the middle of the page you will find that his statement is, "If he does, that is a very great additional benefit to the Government from the standpoint of preparedness."

Mr. MAYO. I think this is plain. It ties it down to the "present annual capacity of its machinery and equipment in the production of nitrogen and other commercial fertilizers." I think that nails it down.

Mr. JAMES. I am not an attorney, but when the attorney representing the Ordnance Department has some doubt about it it seems to me the language ought to be changed so there will not be any doubt about it.

Mr. MAYO. We have not given that any thought, because the question was not brought up before. No matter how we operate we guarantee it will be available.

Mr. JAMES. As I have said, I am not an attorney, but when the attorney for the Ordnance Department has some doubt as to what the language means I say again that it seems to me the language ought to be changed, after consultation with him, so that you both understand it in the same way.

Mr. MAYO. On the other hand, the attorney of the Judge Advocate General's office was sure that we had so worded our offer that we guarantee it. If it is necessary to clarify it, I think we can do it.

Mr. KEARNS. Mr. Mayo, you speak of clarifying this contract. If the committee should decide to go to Muscle Shoals, would it be possible for Mr. Ford and yourself to accompany the committee in order that they could have a chance to talk with him and with you together.

Mr. MAYO. I am sure I could go. I can not answer for Mr. Ford.

Mr. KEARNS. I was talking about Mr. Ford and whether he could go with you.

Mr. MAYO. He may be able to.

Mr. KEARNS. We have had this experience. You are limited in your power to agree to do certain things that are not contained in the contract, but with Mr. Ford there on the ground he could tell us whether or not he would agree to any changes we wanted to make.

Mr. MAYO. Well, I will ascertain if he can go. I think he will be glad to if he can.

Mr. KEARNS. Now, you have authorized a change in the contract so that this company that is to be organized will have a paid-up capital of $10,000,000?

Mr. MAYO. Yes, sir.

Mr. KEARNS. Would that $10,000,000 be the working capital? Would that $10,000,000 be put in the business to operate the business alone?

Mr. MAYO. It would all be put into the business. I could not say just how it would be used—whether it would be working capital or partly plant investment.

Mr. KEARNS. That is what I wanted to know, and I should think that the committee would want to know whether this $10,000,000 was to be used in carrying on the business there or whether part of it would be used in developing the plant.

Mr. MAYO. Some of it would have to go into the plant most assuredly.

Mr. KEARNS. You would not be able to say how much of the $10,000,000 would be used in conducting the business?

Mr. MAYO. My opinion is the whole $10,000,000 would go into the plant.

Mr. KEARNS. You would have to have working capital in some amount, would you not?

Mr. MAYO. We said not less than $10,000,000.

Mr. KEARNS. That means, then, you would put in more than $10,000,000, probably?

Mr. MAYO. Well, whatever is necessary. I imagine it will be twice that.

Mr. KEARNS. How much money will you have to invest for the purpose of carrying on that part of the business which would be represented by the manufacture of fertilizer?

Mr. MAYO. I do not know that I could answer that. Mr. Ford has always said he would put in sufficient capital to properly operate it. Now, we do not know what that will run to in amount.

Mr. KEARNS. That is, to properly operate it, manufacturing 110,000 tons of ammonium nitrate?

Mr. MAYO. Yes, sir.

Mr. KEARNS. And as I understood your testimony before, that would mean about 2,000,000 tons of manufactured fertilizer; that is, the finished product?

Mr. MAYO. That would be the equivalent of 2,000,000 tons on about a 2–8–2 mixture.

Mr. MILLER. Mr. Mayo, your conference with Mr. Ford has only changed his original bid or his offer of January 25 in the two particulars that you have enumerated?

Mr. MAYO. Yes, sir.

Mr. MILLER. You still adhere to the obligation that the United States must acquire the title to this Gorgas steam plant, do you?

Mr. MAYO. Yes, sir.

Mr. MILLER. And vest it in Mr. Ford?

Mr. MAYO. Yes, sir.

Mr. MILLER. Since you have appeared before the committee very able arguments have been made, pro and con, on the rights of the Alabama Power Co. under their contract with the United States Government regarding this Gorgas plant, and it appears that it is going to be an exceedingly troublesome thing to do, and promises a litigation that is almost appalling. Some of our colleagues on the floor of the House may adopt the view that to undertake to segregate the rights of the Government and the rights of the Alabama Power Co. under their contract as they are sewed together, or as I have expressed it before, lockstitched and bound together, I do not know how we can do it, and that may defeat the entire offer of Mr. Ford. Is it beyond the range of possibility that Mr. Ford would further consent to a modification of his offer so that he would take the Gorgas plant in its present condition and assume the responsibility of segregating the Government's rights from the rights of the Alabama Power Co.?

Mr. MAYO. Mr. Ford would not be willing to take over any legal work in reference to it.

Mr. MILLER. Would not be willing?

Mr. MAYO. No, sir.

Mr. MILLER. Then so far as the Gorgas plant is concerned, the offer of Mr. Ford is that he shall have all the property—I am referring now to subdivision (d) of section 11—

"All of the property constituting the steam power plant built and owned by the Government at Gorgas, Ala., on the Warrior River, including lands, rights of way, buildings, machinery, material, fixtures, apparatus, appurtenances, tools, and supplies and the transmission line from the Gorgas steam plant to the nitrate plant No. 2 at Muscle Shoals, and all other transmission lines belonging to the United States and connected with any of the aforesaid Government properties."

We shall vest those rights in Mr. Ford. I was in hopes, Mr. Mayo, that some modification of that paragraph would be effected by which Mr. Ford would take over that plant in the condition it is in now and fight it out with the Alabama Power Co. You think he would not do that, Mr. Mayo?

Mr. MAYO. I think he is of the opinion that the Government is in a much better position to untangle it. He has said right along that he does not expect anything of the Government that they could not straighten out.

Mr. MILLER. But if the Government should undertake to settle it along the lines indicated by Colonel Hull, of the Judge Advocate General's office, and the court should hold that the Alabama Power Co. had a subsisting right there and the United States Government was bound, according to its contract with the Alabama Power Co., it would be an utter physical and legal impossibility for the United States Government to comply with Mr. Ford's offer, because it could not turn over to him this property.

Mr. MAYO. If it was not a legal possibility I am of the opinion that he would not ask for it. The opinions we have are, though, that it is quite possible.

Mr. MILLER. But our contract with the Ford Co., in the event that it was accepted by Congress, absolutely binds the United States Government to quiet the title to the Gorgas steam plant and vest it in your company.

Mr. MAYO. Yes.

Mr. MILLER. Now, suppose we should undertake that and at the end of the litigation find ourselves in the condition that the courts, which constitute our highest authority, hold that the rights of the Alabama Power Co. are defined in their contract and it is our duty to sell to the Alabama Power Co. in the manner provided for in their contract, thereby making it absolutely, legally, and physically, impossible to comply with this clause of Mr. Ford's offer. Now, we may find ourselves in that position and thereby there would be a breach in that respect in the contract.

Mr. MAYO. Well, I think some satisfactory arrangement could be made.

Mr. MILLER. We can not satisfy him, because one very able lawyer has appeared before us, in behalf of the Alabama Power Co., and he has maintained that it will be impossible for the United States Government to sell its interest in the Gorgas steam plant to anybody else in the world except to the Alabama Power Co.; and another lawyer on the other side advises us that the Alabama Power Co. has not any rights there. Now, we have conflicting opinions of lawyers on that proposition, which, of course, is to be expected.

Mr. MAYO. Yes, sir.

Mr. MILLER. And in the end it would go through the United States courts, and we may find ourselves absolutely in a condition where we can not comply with this provision of your offer.

Mr. MAYO. In that event you could reimburse us, I presume. But we do not think you are going to have any difficulty on that score.

Mr. MILLER. At the end of the contract it is provided "that the above proposals are submitted for acceptance as a whole, and not in part"; and if it should happen that we were unable to comply with Mr. Ford's offer as a whole, is it not your understanding that that would vitiate the entire offer of Mr. Ford?

Mr. MAYO. It would; yes, sir.

Mr. MILLER. Now, there are two other important contracts entered into by the United States Government, one with the Air Nitrates Corporation and the other with the American Cyanamid Co., regarding the operation of these plants and the payment of royalties. I suppose when we convey these plants to Mr. Ford's company that company would take them subject to these existing contracts?

Mr. MAYO. Yes, sir.

Mr. MILLER. I believe the last time you were before the committee you gave it as your judgment that bonds could be sold at 4 per cent?

Mr. MAYO. Yes, sir.

Mr. MILLER. For the purpose of building this project down there, whether the cost be $50,000,000 or $42,300,000, which latter sum, in your judgment, would be the cost?

Mr. MAYO. Yes, sir.

Mr. MILLER. Have you any further light to give to the committee on that matter?

Mr. MAYO. I do not know that I have.

Mr. MILLER. You have no more information as to the ability of the United States Government to sell these bonds at 4 per cent at the present time than you had when you were before the committee on the previous occasion?

Mr. MAYO. I do not think I have.

Mr. MILLER. Have you still the idea in mind that these bonds could be sold at 4 per cent?

Mr. MAYO. I certainly have.

Mr. MILLER. I would like to get a line on that suggestion of yours. You must be basing it on some understanding or conference or assurance you have had from financial people. Would you object to stating to the committee what the basis of that statement is, that those bonds can be sold at 4 per cent?

Mr. MAYO. Mr. Ford thinks he can raise that amount by paying not over that amount of interest.

Mr. MILLER. Mr. Ford thinks he can; that is rather an indefinite statement. Would Mr. Ford be willing to put that in his contract, that he hereby guarantees those bonds to be negotiated at 4 per cent interest?

Mr. MAYO. I do not think so.

Mr. HILL. Mr. Mayo, on page 374 of the record I asked some questions of Mr. Worthington. I do not remember whether you were present at that time or not, so perhaps I had better read you the paragraph before that in order to give you the connection. I asked Mr. Worthington this question:

"Mr. HILL. In connection with your expression in reference to the allotment, whether there would be any allotment of a definite amount of horsepower for the use of the fertilizer plant and the nitrate plant, what would that be in value?

"Mr. WORTHINGTON. In that particular case, measuring the production of nitrate plant No. 2 in ammonium nitrate, it would be about 110,000 horse power.

"Mr. HILL. You spoke of it being from 100,000 to 110,000 horsepower.

"Mr. WORTHINGTON. Stating the production in terms of ammonium nitrate."

I then asked him this question, which I want to ask of you as Mr. Ford's representative:

"Mr. HILL. Would it be a thing for us to consider here in connection with section 14, concerning which there have been a good many questions—you probably recollect that the Secretary of War testified that he was not clear as to the guaranty for the production of fertilizer, so we have been particularly interested in section 14."

Then I asked him this definite question, which I should like to ask of you:

"Suppose we added to section 14, in the third line, after the words 'ammonium nitrate per annum,' something to this effect:"

This is a suggestion of a change in paragraph 14 of the Ford amended offer, and I am asking you if Mr. Ford would be willing to put in the third line, after the words "ammonium nitrate per annum," something to this effect: "and that the company would promise to devote to the said production 100,000 of primary horsepower from Dams Nos. 2 or 3 or from the steam plant at Gorgas or the steam plant at nitrate plant No. 2 throughout the lease period."

Could you answer that question for Mr. Ford, whether he would be willing to amend section 14 by adding that language?

Mr. MAYO. Well, I can hardly see the necessity of it.

Mr. HILL. Just let me explain. Section 14 provides for nitrates or other fertilizer products in terms of ammonium nitrate.

Mr. MAYO. Yes, sir.

Mr. HILL. It has been stated to the committee that that was equal to about 100,000 horsepower?

Mr. MAYO. Yes, sir.

Mr. HILL. That is what Mr. Worthington says. Suppose, in the perfecting of the process of manufacture, only 25,000 horsepower would be necessary for the guaranteed amount of fertilizer. This plant is in the center of the Fourth Army Corps Area, which contained the training grounds of most of the eastern and southern divisions during the late war.

In the event that any further national emergency came about, Camp McClellan and all those other camps will undoubtedly be used again for national training centers for troops. They always have been so used because of the climate. I am very much interested in the securing to the Government all of the electric power for general use there that is necessary. So if later on, in order to produce this fertilizer, there would only be necessary 25,000 horsepower per annum, I am asking if Mr. Ford would then be willing to turn over to the Government the remaining 75,000 horsepower for the Government's general purposes; for instance, to light Camp McClellan or to use it for anything else there that it might be necessary to use it for.

The Alabama Power Co. has made an offer to dedicate 100,000 secondary horsepower, and I would like to ask you if Mr. Ford would be willing to modify paragraph 14 by guaranteeing the Government during the terms of the lease either 100,000 primary horsepower or 100,000 secondary horsepower for use for any purpose the Government decided to put it to.

Mr. MAYO. I think he would be glad to guarantee the Government something along these lines.

Mr. HILL. Will you please think of that and let us have your answer to it in the record, because we will be asked to compare that with the offer of the Alabama Power Co. or the Alabama Power Co.'s suggestion? Will you kindly put in the record an answer along that line?

Mr. MAYO. Yes; I will be glad to do that.

Mr. Ford understands his offer to operate plant No. 2 to approximate present capacity as a guarantee that he will utilize at least 100,000 horsepower in the manufacture of commercial fertilizers. He will use as much of this in primary power and as much in secondary power as will give greatest economy under operating conditions. Of course, in a national emergency such

as is referred to by Mr. Hill above the entire power capacity of the project is immediately placed at the disposal of the Government.

Mr. FIELDS. Mr. Mayo, as I read section 17, which Mr. Greene discussed with you, I do not find the word "forever" in the section to which Mr. Greene referred; I do not find, with regard to the company's lease that the word "forever" does appear.

Mr. MAYO. No, sir.

Mr. FIELDS. But it provides that it shall be done upon such terms as may then be determined?

Mr. MAYO. Yes, sir.

Mr. FIELDS. I just wanted to straighten that out. I understand that your definite answer as to why this franchise should be for 100 years is that the investment that will be required is entirely too large to be made upon a 50-year franchise?

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. Mr. Mayo, I want to ask you one or two questions in relation to paragraph 17, concerning which Mr. Greene interrogated you at some length. I think I understand that paragraph, and I believe I understand the purpose of Mr. Ford in having it drawn in the manner in which it is drawn, and I do not fully concur with my friend Mr. Greene as to the danger in that section as it is drawn. The question I want to ask you is this: At the end of the 100-year period the Government has the right to take over this property and operate it?

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. In that event the Government undoubtedly would want a market for this power, and that being true, there is no question in my mind but that the corporation then existing could procure power from the Government, is that not true?

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. However, it might be possible there is one contingency, and I think that is the one in the mind of Mr. Greene, that at that time the Government might desire, if we keep on drifting, as we have been drifting for a number of years, in my judgment, the Government might desire to enter into some manufacturing activity, or socialize the plant in a way, and in that event the Government might decline to sell to this corporation any power; but that, of course, is problematical.

Mr. MAYO. Yes, sir.

Mr. MCKENZIE. On the other hand, in case the Government should decide not to operate it, but would lease it to some one else other than the successors of the Ford corporation, is it your judgment that the public utilities commission, which undoubtedly would be in existence in the State of Alabama, or that the Federal laws regulating such matters would require that a great plant such as you propose and have visualized, that will be standing there on the banks of the Tennessee River, would be entitled to the use of power, and that no political organization or any other combination that might be set up could be justified or would even be permitted, under the law, to simply say to those people, "You can not have power." What do you think about that?

Mr. MAYO. That was the whole thought in framing that paragraph.

Mr. MCKENZIE. If that is true, do you not feel that in case there are some of our friends like my friend Mr. Greene, who have some apprehension about the violation by that language of established precedents in our country, that you could leave that particular part of the paragraph out without endangering the people who will own the stock and bonds of this company 100 years from now, and eliminate that bone of contention, which apparently has been engaging the minds of some of the people who have been studying this question?

In other words, Mr. Mayo, is it not a mere incident that would not justify Mr. Ford or his representatives in arbitrarily standing on that one little point in the contract, in comparison to the other great issues involved? Putting it directly to you, would you have any serious objection to the elimination of that paragraph?

Mr. MAYO. We had not thought of it in that light. There might be some change made there. When we were framing up the paragraph Mr. Ford's whole thought was that he did not want any preferential right of any kind, except that he did not want to stand the chance of the power being taken away from the plant.

Mr. MCKENZIE. I understand that.

Mr. MAYO. So that wording was framed to prevent that happening.

Mr. MCKENZIE. I think I perhaps would have felt a good deal like Mr. Ford on that proposition, looking 100 years into the future, but realizing that the Government and the courts of our country are usually just and fair, I can not feel any great apprehension of any danger or of any abuse that might result to the successors of the corporation in case that language was eliminated from the contract.

Mr. MAYO. It would almost amount to the confiscation of the property if we were deprived of the power.

Mr. MCKENZIE. That is why I feel that you would be protected, undoubtedly, by the public utilities commission if that commission existed, or if no such commission existed certainly you would be protected under the law, having in good faith established a plant alongside of this stream where the power was to be used. So it seems to me you would have some rights that would be given consideration.

Mr. MAYO. We will take that into consideration.

Mr. GREENE. May I follow that, Mr. McKenzie? The particular emphasis that I am seeking to give to this proposition, Mr. Mayo, is upon the prerogative of a government always to be free to exercise its own option to do anything which it considers a matter of public policy. I am quite confident that, while you are here properly representing the interests of this immediate, prospective investment there, you do not want that proposition to embarras the Government in any possible way nor lead it upon a policy which your children might want to repudiate. The word that is a stumbling block in this thing is not what has been suggested with some attempt to repeat my questions here, but is the words "to have power," which involves no option whatever. It does not say there is an option of preferential right to make a bid; it says the right to have power, and the word "right" has a very clear definition, of course, in law. A right is a right, not an option.

The CHAIRMAN. Will you let me also ask this question right there in connection with your proposition? If, as Mr. Mayo suggests, in 10 years they might come to an agreement that 10 years would not void this language that Mr. Greene is referring to, because it would also always give Mr. Ford the right to have his property protected before anybody else.

Mr. GARRETT. You mean the first 10 years following after the first 100 years?

The CHAIRMAN. Yes.

Mr. GREENE. The Government could only sell what it has, and if it has a property or a use which has entailed upon it another use, it can only sell that, and that entailment is in the words "right to have power." They would sell the property to somebody else or lease it to somebody else, always subject to that other use.

Mr. GARRETT. In the next 10 years the contract will be under a different agreement.

The CHAIRMAN. They may not make a different agreement; they may insist upon their rights under this agreement.

Mr. GARRETT. I want to ask Mr. Mayo this question, and ask that you consider it in connection with this section, which seems to raise a question of the right in perpetuity. I want to ask you if the language of secton 17 shall be so modified as to give the successors of the Ford corporation at the end of 100 years equal rights with all other parties under then existing public utility laws, either State or Federal, whether that would be acceptable, when they go to make a new contract; that is the only question there is here.

As far as I am concerned, I do not think that at the end of the 100 years there will be any more question than there is now that the people and everybody concerned will be protected by the public utility laws of that time.

Mr. GREENE. I do not doubt it. I do not want to be wearisome about this thing, but I think you will find, Mr. Mayo, that many people who are perhaps now disposed to some such disposal of the property as may be contemplated in the Ford offer still have conscientious reservations about the terms as they involve this public policy. I want to make this picture plain, if I may. If, 100 years ago, men sitting in this Congress had tied up to some specific contract with a citizen or a group of citizens that involved certain mechanical agencies and perpetuated the use of those agencies in those people by the hard and fast terms of that contract, we to-day would be confronted possibly with this very situation: At the time the fathers made that contract there was no transportation by steam; electricity was unapplied to motive power; the telephone, the telegraph, and various other things which now enter into the very texture of this contract itself were not in existence, and mostly unheard of. But they

have completely revolutionized physical existence in this land, let alone the economics it was based upon.

If we to-day undertake to make a hard and fast contract which is binding in perpetuam, it may be, very possibly, that in 100 years from now not only is the concept and policy of our Government completely changed, but the Government itself may be at that time doing things which most of us do not want it to do. Not only that, but this very fact is possible, that we no longer shall depend upon water power for motive power; it may be possible that the dreams of the philosophers and engineers of extracting power from the great reservoirs in the universe are applicable, and this thing is entirely out of the question. It may be said that works to the interest of the Government as much as to the interest of Mr. Ford, but yet we are presently engaged in mortgaging a future in specific detail. The fathers very wisely provided in the Constitution terms of generality, so that those provisions would be general enough to meet conditions in the future. Why should not this contract be written in the same sort of way, so that if conditions change the Government is always free, it is superior to any interest that may compete against it? That is what I am asking for.

Mr. MAYO. I do not want you to think you are wearying me. We court the full vent of the committee's feeling on this matter. It is quite a different thing to sit around and criticize a contract than it is to sit down and make it out of whole cloth.

Mr. GREENE. I understand that thoroughly.

Mr. MAYO. The only instructions we had from Mr. Ford in making this contract up was not to give him any preferential right of any kind, with the exception that we were to fortify it against the liability of having the power taken away from the plant. We worded it as best we knew how. I do not pretend to say that we are dead right or that we have it in the best form.

Mr. GREENE. While it is true that presently we are engaged in criticizing Mr. Ford's offer, if we take it to the floor of the House, it becomes our offer.

Mr. MAYO. I know that, and, as I say, we want the full views of the committee, and you may let them come as fast and as long as you please.

Mr. GREENE. I think that you are going to find—and I say this in no attempt to interject any sort of dissension——

Mr. MAYO (interposing). There is no resentment on my part; I do not care how far you carry on your discussion.

Mr. GREENE. I think you are going to find a good many people who study broad questions of public policy are not content to listen to the cry about fertilizer. They realize that down under that there is every vital principle of governmental policy involved, and that it is proposed in these terms, which will cover fertilizer, to establish a policy that will obtain 100 years from now, and it is a little discouraging to people who like to see their Government always free to keep safe, and to make a contract in which it will keep safe, to keep that contract in the hope that it will give public benefit, and yet to be sure that the contract has within it powers of its own termination, providing against the contingencies, not of a day, but of a century.

Mr. MAYO. Of course, Mr. Ford is of the opinion. I think that the rules and regulations for operating this plant will be so laid down that there will be no question about the power at the end of the lease period.

Mr. GREENE. You and I can stipulate here, and we would be very much in the same relationship to it that Ben Franklin was to his kite and his door key. It is true that he got a little glimpse of what lightning was, but he never saw a Packard.

Mr. MAYO. That is true.

Mr. HILL. Mr. Mayo, it is obvious from the questions that have been asked this morning that this committee is very much interested in section 17.

Mr. MAYO. Yes, sir.

Mr. HILL. I think when you appeared before the committee on February 14 you made a very clear statement of that subject, and I want to read to you two questions that I then put to you and two answers you then made, and the question I want to ask you now is whether you have said anything this morning differing from the answers you then made, or whether Mr. Ford is ready to make any change in the position you then took, and which I understand you still take?

I invite your attention to page 275 of the testimony in order that you may look at it. I shall only read two questions and two answers at the bottom of that page:

"Mr. HILL. Now, then, that paragraph, according to Mr. Ford's intention, means that after the 100-year period, if it is not arranged that his interests or the successors of his company shall buy the property, he will have a perpetual right to get indefinitely a first lien on power that is produced there, not to exceed the average amount used annually in the previous 10 years?

"Mr. MAYO. He thought he ought to have it, everything else being equal."

Mr. HILL. That is a very unusual arrangement; it is one not noticed before. Here is the proposition which he puts up, as I understand it: It does not make any difference what the ultimate position is, his company has a perpetual first claim on the plant after the 100-year period; is that not right?

Mr. MAYO. Yes, sir. [Reading:]

"Mr. HILL. Do you think it is a proper thing for the United States Government to tie itself up in reference to this plant forever?

"Mr. MAYO. I think so; I do not see that they can lose anything in doing so. They can always exact of him whatever they could get from anybody else."

Mr. HILL. As I understand it, that is Mr. Ford's position.

Mr. MAYO. Yes, sir.

Mr. FIELDS. Mr. Mayo, you and Mr. McKenzie apparently agree that this company could secure, either under the Federal or State public service laws at that time, the rights that it attempts to secure in paragraph 17. If you are correct in that, this paragraph is of no value to the Ford Co., except that it would give it without litigation what it would get by litigation, thereby saving the trouble of going into litigation; that is to get that right either through the Federal or State public service commission at the end of the lease; that is, to get what it asks for in this paragraph.

Mr. MAYO. Yes, sir.

Mr. WURZBACH. Mr. Mayo, in line with the questions put to you by Mr. Greene, in reference to a grant in perpetuity involved in this contract, is it not a fact that whenever the Government makes any grant of property—say land, for instance—that the Government surrenders all control of that property in perpetuity?

Mr. MAYO. I think so.

Mr. WURZBACH. Without reference to the added value that that property may have at the end of 100 years, or at the end of 1,000 years?

Mr. MAYO. Yes, sir.

Mr. WURZBACH. Under this section 17 the Government retains the right to operate this plant.

Mr. MAYO. Yes, sir.

Mr. WURZBACH. And only if it elects not to operate the plant, but desires to lease or sell the property, the Ford Co., in effect, asks for an equal right to become the purchaser of power sufficient to operate its plants?

Mr. MAYO. Yes, sir.

Mr. WURZBACH. At a reasonable rate?

Mr. MAYO. Yes, sir.

Mr. WURZBACH. Suppose that this provision was not in the contract at all, at the end of 100 years what other rights would the Government have in addition to the right that they have if they enter into this contract with section 17 in it? They could either operate the plant or they could sell the property or lease the property, and if they sold the property they would sell it at a reasonable price, and if they lease it they would lease it on reasonable terms.

Mr. MAYO. Yes, sir.

Mr. WURZBACH. Or if they sold part of the power they would sell it on reasonable terms.

Mr. MAYO. Yes, sir.

Mr. WURZBACH. So, in effect, what limitation is there upon the Government in section 17, except to prevent the Ford Co. from not receiving an equal opportunity with anyone else to become a purchaser or contractor with the Government?

Mr. MAYO. As Mr. Greene brought out, of course they would be tied to one customer.

Mr. WURZBACH. Suppose they wanted to sell to some other customer? The conclusive presumption is that they would sell it on reasonable terms.

Mr. MAYO. Yes, sir.

Mr. WURZBACH. Is not that all that the Ford Co. reserves the right to do under section 17?

Mr. MAYO. I think so.

Mr. WURZBACH. So, do you see where there would be any real limitation or restriction upon the rights of the Government at the end of the 100 years?

Mr. MAYO. I think with this reservation in the contract the Government could get as much money out of it, whatever they might do, as though that provision were not there.

Mr. WURZBACH. And it is exceptional from the usual sale of property by the Government or the usual grant by the Government in that the Government is reserving rights it does not usually reserve when it grants land or other property?

Mr. MAYO. Yes, sir.

Mr. GREENE. Do you see a parallel between the granting of land by the Government for occupancy, which is, of course, the first necessity in any social order—that is, some place to live—and the granting of a natural power of some kind, stored, like mines, or quarries or water power? Are they analogous?

Mr. MAYO. What is the difference?

Mr. GREENE. A thing can not contain any more than it will hold. Land can only be occupied by a man as a homestead, and the broad purpose is to give him the exclusive right to use it. Water power may be disposed of by many agencies and it is not dependent upon occupancy.

Mr. MAYO. I think it is the same.

Mr. GREENE. Are they embraced in the same class, like tenant holding, or the use of natural powers?

Mr. MAYO. Not quite.

Mr. GREENE. There is quite a difference in the philosophy of their operation, is there not?

Mr. MAYO. There is some difference between an ordinary homestead tenant and a public-property tenant.

Mr. GREENE. Is it not the fact that the Government has two enactments of law, one for homesteading, and another for the use of water powers, which are provided for by separate acts of Congress, based upon different use?

Mr. MAYO. Unfortunately, I am not very conversant with the law in respect to those matters.

Mr. GREENE. I do not think the analogy holds. I think there is a different philosophy engaged in their use.

Then there is another thing, and that is the question as to where the Government would come out at the end of the hundred years; I do not mean expressed in terms of money; I do not care about that.

Mr. MAYO. I know; you are referring to the principle involved.

Mr. GREENE. Yes.

Mr. WURZBACH. I do not suppose Mr. Greene would make any objection if the Government should undertake to sell this property outright. Still it would be subject to the same conditions if it was a matter of policy.

Mr. MAYO. I would like to ask Mr. Greene, if he were the owner of this property how he would protect his rights at the end of a hundred years? What is your suggestion?

Mr. GREENE. My suggestion is that any man engaging in a contract with the Government has to weigh between his own mind and—not using the term in a mean sense—his selfish right of the conservation of the interests of himself and his family and his own necessity, with relation to what he has, as one unit in the great whole to all other units that make up the Government. There is quite a nice balance to start with.

The second, perhaps, is that Henry Ford and all of this living generation will have passed into oblivion long before this contract becomes terminated at the end of the 100-year period; that is, such parts of it as do terminate, and the people who will be in the then enjoyment of the property will at that time be in the enjoyment of property that has been paid for out of its earnings, and the full amount of its capital stock will have been returned more than once in all probability, and they will have made no original investment and incurred no risk.

Mr. MCKENZIE. Will you permit me to inject this at the end of your question in connection with this matter, Mr. Greene? Of course, there is a very wide distinction recognized now between the disposition of what might be termed natural resources and of property, such as public lands, and that principle, I think, Mr. Greene, has been trying to bring out in connection with that, that the Government heretofore, it might be said in severe criticism, has parted with many of our valuable natural resources and conveyed them to private interests, which, perhaps, was a mistake.

Mr. MAYO. I agree with you on that. The way I look at it is this: If the plan is successful, the plant will keep on increasing in size, and at the end of the 100-year period it will be larger than at any other period, hence the necessity for safeguarding the power. Where will you be if you do not protect yourself in some manner? You say it has paid for itself. But right at that period there may be many stockholders in it that are new; they may be new investors and they may not have made any money out of it.

Mr. GREENE. But they take the same risk that everybody does, because no generation starts even with the people of that generation, knowing the conditions of that generation. The whole philosophy of the English-speaking system is to leave each generation free to settle its own policies. As a business proposition we realize that you have to fix some definite period of time, and we have set upon 50 years as the duration of a water-power project. A century is a long time when we have to consider the future.

Mr. MAYO. There is no difference in the principle, as I see it, whether it is 50 years or a hundred years, is there?

Mr. GREENE. There is no difference in the principle so far as the pure logic is concerned, but so far as physical effects are concerned there may be all the difference in the world. So it is recognized that the term of years is not the recognition of a principle, but is an admitted compromise.

Mr. MAYO. There was considerable difference of opinion in regard to the term of 50 years.

Mr. GREENE. Oh, yes; but it was an arbitrary compromise; it was a compromise in the lifetime of a living person.

The CHAIRMAN. The testimony before the committee is to the effect that the Alabama Power Co., and also the Air Nitrates Corporation, believe that they have a bona fide agreement with the War Department officials turning over to them nitrate plant No. 2.

It is very evident to me—and I have heard all the testimony—that we are going to have litigation on that proposition; whether we turn it over to you or whether we give it to either of those other companies, it is going to bring us litigation. We may not be able to deliver over to Mr. Ford the plant as readily as some of the members would like; it may take some years to thrash this thing out in the courts.

Do you think that Mr. Ford expects the Government to expend the money in the litigation, or will he bear that expense himself?

Mr. MAYO. No, sir; I do not think he will bear the expense, but he does not think you are going to have any litigation to speak of.

The CHAIRMAN. Of course, he has not been listening to the testimony that this committee has been listening to, and I am convinced that it is going to result in litigation, so far as I can see, whatever we do.

Now, of course, I would like to settle this matter so that the country can begin to get fertilizer as soon as possible, and that the whole question can be settled without delay. Do you not think if Mr. Ford were seen about this provision it is possible that he might come to some conclusion which would avoid the great amount of litigation that evidently might crop out? Now, I say frankly that the judge advocate general has made a firm statement to the Secretary of War. He says that these other agreements are void, that these people have no rights at all. These people also have eminent lawyers, and they have been consulted regarding the rights of the companies during the war, and their coming to the assistance of the Government at the Government's request during the war, doing certain things for the Government which the Government accepted. Do you think we can brush that all aside and expect that the courts will brush it all aside, and that we ought to be compelled to bear any expense growing out of that condition? Do you think that Mr. Ford would be willing to take the thing subject to any possible litigation?

Mr. MAYO. I think if Mr. Ford took it subject to litigation there would be no telling where he was "at."

The CHAIRMAN. Do you think there is any telling where the Government is "at," if we agree to practically encourage litigation?

Mr. MAYO. It is the Government's business; not his.

The CHAIRMAN. Of course, this whole thing really is a matter that has come up in comparatively recent months; but I imagine that most Members of Congress, and I am sure, so far as this committee is concerned, we did not know of all these involved situations until we began to take up this very matter.

Mr. MAYO. I think that is very true, and I think it is a good thing that they have all been brought to light.

The CHAIRMAN. I think so myself.

Mr. MAYO. Of course, Mr. Ford can not buy litigation; you can never tell what the price is. I also think the Judge Advocate General's opinion is worth a great deal. I do not think it is an opinion only. I think it is backed by his considerable experience.

The CHAIRMAN. I have a great deal of respect for the Judge Advocate General of the Army. I find that invariably he is right. Once in a while he is turned down, but I have generally found him pretty solid. But yet, since I have heard all this testimony, I have my doubts on that very thing.

But it is a matter which you might take up with Mr. Ford when you speak to him again, and you might find out whether he would be willing to consider a proposition of that kind.

Mr. MAYO. I was pretty conversant with all the facts before Mr. Ford made the offer, and I have listened to a great deal since, and I have also read and listened to a great deal of the testimony. As far as I am personally concerned, I am less doubtful now than I was when we started. I think bringing this whole business out has clarified the situation quite a good deal. I think, too, that all the so-called troubles will vanish very quickly when something is done. It would be a crime not to settle this matter very soon, so that we could get into the river this summer, if we get the contract. If this dry period is lost you are losing lots of money on top of the cost of upkeep.

The CHAIRMAN. I feel that it ought to be settled quickly. That is why I have tried to carry these hearings along as expeditiously as possible.

Mr. MAYO. Now, Mr. Chairman, there is a question in regard to one or two changes that the farm organizations were talking about, which I think you desire to take up.

The CHAIRMAN. We will be very glad, Mr. Silver, if you will present to the committee such changes as you have to suggest. We will be glad to have those changes presented either by you or by Mr. Mayo.

ADDITIONAL STATEMENT OF MR. GRAY SILVER, REPRESENTING AMERICAN FARM BUREAU.

Mr. SILVER. Mr. Chairman and gentlemen, when I testified before you a few days ago I stated that we had some suggested changes under consideration, and I now desire to present to you the changes I referred to at that time. In section 14, in subparagraph (a), the last line after the word "industries," change the period to a comma and add the following: "and if so found and determined, to reasonably employ such improved methods." That treats of the application of research, in which we want to be helpful, and which we think will be helpful as it will be employed in the business.

The CHAIRMAN. What is that suggested change; will you kindly state it again?

Mr. SILVER. In section 14, subhead (a), in the last line, after the word "industries," change the period to a comma and add these words, "and if so found and determined, to reasonably employ such improved methods."

The next suggested change is in section 15, line 3. We suggest that there be stricken out the words "at nitrate plant No. 2" and that before the word "actually" there be inserted the word "fair", making it read: "shall not exceed 8 per cent of the fair actual annual cost of the production thereof." That would bring up the question under consideration of the board of farmers, and if they did not agree it would follow along to the Federal Trade Commission for determination. The suggestion that you strike out the words "at nitrate plant No. 2" was for the purpose of bringing all the manufacture there within this contract; we were going to limit it exactly to No. 2.

The next change is in paragraph 15, line 17, after the word "time," strike out the following language, "the said board shall also determine the equitable territorial distribution of fertilizers produced at nitrate plant No. 2," and insert in lieu thereof the following:

"In order that such fertilizer products may be fairly distributed and economically purchased by farmers, the said board shall determine the equitable territorial distribution of the same and may in its discretion make reasonable regulations for the sale of all or a portion of such products by the company to farmers, their agencies, or organizations."

That is for the purpose of getting this fertilizer product to the farmers without intermediate and unnecessary cost.

Those are all the suggestions we have to make, Mr. Chairman.

The CHAIRMAN. Did you take up the proposition referred to in the prior hearings about the organizations of these three farmer organizations and the use of the words "or their successors"? Did you do anything about that?

Mr. SILVER. There was some discussion about that among ourselves, but we felt that would take care of itself. We felt that the language was ample.

Mr. QUIN. Mr. Mayo, you have heard the suggestion made by Mr. Silver, coming from the farmer organizations?

Mr. MAYO. Yes.

Mr. QUIN. Are those satisfactory to you as the representative of Mr. Ford?

Mr. MAYO. Yes, sir.

Mr. QUIN. You agree to them?

Mr. MAYO. Yes, sir.

ADDITIONAL STATEMENT OF HON. MARION BUTLER, ATTORNEY FOR MR. FREDERICK E. ENGSTRUM.

Mr. BUTLER. Mr. Chairman, I would like to have the privilege of making some observations to the committee in contrasting the two propositions; that is, the amended proposition of Mr. Ford and Mr. Engstrum's proposition. In the statement which I made previously I confined myself to a statement of the advantages of the Engstrum proposition alone, without attempting to contrast it with others or to discuss them in juxtaposition. I did that purposely because I understood some other amendments were to be made to another proposition, and I thought it would be more appropriate to contrast the propositions after they were complete. And besides it was just possible, we thought, we might want to ask the privilege of amending our proposition, in view of the amendments to be suggested. This morning we have no amendments to offer to our proposition after hearing those that have been offered to the Ford proposition. We are ready, and desire an opportunity if the committee will have the patience to listen to us, to briefly contrast the two propositions, or, in fact, state in parallel columns the Engstrum proposition with the Ford proposition, with the leading points of each, and we especially ask this because our proposition is the only one that proposes to devote the whole plant to the governmental purpose of making nitrates both for peace and war, and necessarily our proposition had to be very different from the others, but the result coming to the public and the Government are so clear when put in juxtaposition that we feel we would like to make that statement, and it might be of service to the committee in the analysis of the propositions which are before you.

The CHAIRMAN. I will be glad to submit your proposition to the committee when we go into executive session.

(The committee agreed that the following statement should be inserted:)

WASHINGTON, D. C., *March 13, 1922.*

Hon. JULIUS KAHN,
Chairman Committee on Military Affairs, House of Representatives.

DEAR MR. CHAIRMAN: Supplementing my oral statement in explanation of the Engstrum proposal to lease Muscle Shoals, I desire to ask the attention of the committee especially to the serious scarcity of available nitrogen. There is not in sight in this country, or elsewhere, sufficient sources of supply; the demand for nitrogen is increasing faster than the supply; therefore, the supply is relatively decreasing all over the world.

The statistics presented to your committee by the Department of Agriculture show that the supply of nitrogen in the United States is grossly inadequate; that we need this year more than 10,000,000 tons of commercial fertilizer; that last year we used only half of that amount. The statistics also show that the amount of nitrogen needed in this country, for fertilizers alone, has been increasing on an average of 7½ per cent each year. This means that in nine and a half years we will need twice as much fertilizers, or 20,000,000 tons. This amount represents our needs in time of peace; but if war should come, then we will at once need a greater supply.

The evidence before you also points to the early exhaustion of Chilean nitrates and to the limited and inadequate supply in this country from coke ovens and the few other minor sources of supply. All agree that the only way to supply the present as well as future needs is by the fixation of nitrogen from the air.

We used in this country last year, for all purposes, only 175,000 tons of nitrogen in the form of ammonia, while Germany used over 500,000 tons. She got 100,000 tons of that ammonia from her coke ovens and from waste and other by-products; she got 100,000 tons from the air by the cyanamid process; and she got the other 300,000 tons from the air by the Haber process, which is the most efficient process for the fixation of atmospheric nitrogen.

It is obvious that the United States, with its vast area, needs and should use more ammonia for fertilizer alone than is used in Germany, with its comparatively small acreage; yet we used last year less than one-fourth as much as Germany. In fact we used only 40 pounds of fertilizers per acre, while Germany used 188 pounds. At the same time England used 162 pounds per acre, more than four times the amount used by us, while France and even Italy used twice as much nitrogen for fertilizers per acre as we used in this country.

It is a pregnant fact that Germany gets the bulk of her supply of ammonia for fertilizers and also for explosives from the air, and that she gets it chiefly by the Haber process. From that source, the only sufficient and unlimited source of supply, we are not producing any.

In the face of these plain facts it is clear that we need to-day all the nitrogen which can be produced at Muscle Shoals by both nitrate plant No. 1 and nitrate plant No. 2, and that we should lose no time in putting both plants to work on full time. While nitrate plant No. 2, being the cyanamid process, is the largest and will for that reason produce for the present more nitrates than can be produced by plant No. 1, which is much smaller, yet the better plant, being the Haber process, is the cheaper process and holds out more hope for the future.

No one who is concerned in providing this country with an adequate supply of nitrogen and cheaper fertilizers can favor the scrapping of plant No. 1, which would mean the abandonment of the Haber process. All the testimony before your committee is to the effect that the Haber process is the better of the two, and that it has the greatest possibilities of development; and all agree that nitrate plant No. 1 can be easily remodeled so as to make it work with complete success.

Indeed, the testimony of both the War and Agriculture Departments is that we now know how to make plant No. 1 the most efficient Haber process plant in the world. The chief defect in that plant is the want of an effective catalyst. The composition of the catalyst used by each country is a secret. When we built this plant during the war we knew all about the German Haber process, except the composition of the catalyst they were using. We tried to make one and failed; but now we know. The one other defect in that plant is the mechanism for purifying the nitrogen and hydrogen gases before they are passed over the catalyst and tied together to make ammonia, but we know now how to remedy that defect; it is purely mechanical.

Since the war we have made, in our experimental laboratories here in Washington, a catalyst which is to-day the best in the world. The catalyst used by the Germans at the time of the armistice was only 6 per cent efficient. The one which we have made, the secret composition of which we are guarding, is 16 per cent efficient as the German catalyst by laboratory tests, and I think all experts agree that it will be at least twice as efficient in practical operation, where the conditions are never as favorable as in the laboratory.

We have also succeeded since the war in making the largest and most efficient electrolytic cell in the world. This cell is the most improved method known for producing hydrogen gas. It is most efficient where you have cheap hydro-electric power; it is more efficient than the coke and water method for producing hydrogen gas now used in Germany and also in the Haber process at Syracuse, N. Y. This new electrolytic cell is a 10,000-ampere cell, and it is a tested success. The largest cell which had before been built and successfully used was 250 amperes. So we have perfected a cell forty times larger than any other ever built and used, which means greater efficiency and economy in producing nitrates. Besides, when we put this electrolytic cell in nitrate plant No. 1 we will also put in the liquid air method for taking the nitrogen from the air. It is the hope of everyone, however, that we will soon learn how to get the nitrogen from the air by electricity, as we can now get the hydrogen by electricity from water.

Therefore, it is obvious that we should not scrap plant No. 1, first, because we now need all the nitrogen that can be made by that plant, and, second, because the hope of the future development of the art, to meet the growing needs for more nitrogen and cheaper fertilizers, is through improvements in the Haber process, and, third, because we already have in the possession of our Government

two important improvements on the Haber process (the new catalyst and the new electrolytic cell), which will make this plant at once the most efficient on earth, so far as we know, for the fixation of atmospheric nitrogen.

I submit that the evidence before your committee shows that my lease of this great water power should provide:

1. That a sufficient amount of the power developed at Dam No. 2 should be used from the beginning to operate both nitrate plant No. 1 and nitrate plant No. 2 at their full capacity.

2. That the remaining power to be developed at Dam No. 3 and at other dams on the Tennessee River (and also by means of storage reservoirs on its tributaries) should be conserved and used to operate more nitrate plants by the cheap Haber process, as they are required to meet the growing need for nitrogen.

I submit further that it would be most improvident to lease Muscle Shoals, having a potential future of at least 1,000,000 horsepower, with only enough power reserved to operate nitrate plant No. 2, which will produce less nitrogen than our present needs, with all the remainder of this enormous water power surrendered and mortgaged to a private monopoly for 100 years or more.

Agriculture in the United States is now in a starved condition for want of nitrogen. With our needs for it increasing at the rate of 7½ per cent a year, our starved condition will be 100 per cent worse at the end of the next 9½ years. Indeed, at the end of 100 years our needs for nitrogen will be greater than could be supplied by the whole 1,000,000 horsepower which can and will be developed at Muscle Shoals.

The Engstrum proposal provides for operating both the nitrate plants at their full capacity from the beginning, and also provides for the operation of another nitrate plant with the power to be developed at Dam No. 3; and, further, for the operation of still other nitrate plants as fast as there is necessity to develop more power to produce more nitrogen on this river. In fact, nitrate plant No. 1, instead of being scrapped should be enlarged, as soon as possible, so as to produce more nitrates by that cheap and efficient process. The cyanamid process is much more expensive and is being abandoned by all countries which have used it. In short, under the proposed Engstrum contract, the whole water-power project will be dedicated for 50 years to producing cheap and sufficient nitrates for national defense and to supply the growing needs of agriculture for cheap fertilizer.

Under the Engstrum proposal, this property, which will enormously increase in value, will be returned to the Government at the end of 50 years, and with no strings to it. We ask for no preference at the end of the 50-year period; if our company has not handled the property during the term of the lease so as to make it to the interest of the Government and the public to renew the lease, then we should not have the right to ask for any preference, because we would not deserve it.

We do not offer to capitalize our company for $10,000,000; first, because we are not buying any property from the United States, and second, because we are not proposing to use the larger part of this power for a manufacturing program for private profit. The only capital which we will need will be sufficient for operating expenses until we are a going concern. That amount our company will be amply able to furnish; indeed Mr. Engstrum's private means is amply sufficient for that purpose. The $10,000,000 capital of Mr. Ford's company will be needed and will be used to build and operaate automobile plants, which will use the bulk of this power for private profit. Neither the Government nor the general public will be profited to the extent of one penny by the $10,000,000 capitalization. On the other hand, it means the robbery of the people and the industries of that section, within a circle of 1,000 miles, of all opportunity to get cheap power from Muscle Shoals; and it means the robbing of agriculture for 100 years and more of the benefit of all that enormous cheap power for producing cheap fertilizers, except the small amount needed to run the one nitrate plant, and that by the old and expensive cyanamid process.

The Engstrum Co. will be a going concern before Dam No. 2 is finished. We realize, however, that our profits will be small, if any, during that period; but when Dam No. 2 is completed, there will then be an assured profit under our contract both to the Government and to our company. But no matter what the capital of a company may be or what the individual wealth of its stockholders may be, the one important thing needed to protect the interests of the Government and the public is a good and sufficient bond, acceptable to the Government, and that we are prepared to furnish.

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If Mr. Ford's proposal should be accepted the Government will be required to spend over $60,000,000 to complete Dam No. 2 and also to build outright Dam No. 3, including the submerged land, which the Government is required to buy. After the expenditure of this large sum, the only benefit which will accrue to the public will be from the operation of nitrate plant No. 2 to make fertilizers at 8 per cent profit. This will require only 100,000 horsepower, while the remaining 550,000 horsepower, and all the power produced at Dam No. 3 will be used by Mr. Ford's company for other purposes and for private profit. Mr. Ford does not begin to pay the Government the proposed 4 per cent interest on this new $60,000,000 investment until after the dams are built, and it will amount to only $2,400,000 a year for the use of all of this power from both dams. In addition, the Government is required to sell outright to Mr. Ford both nitrate plants, including both of the completed steam plants standing by them, and also the Warrior steam plant and transmission line, with the large limestone quarry thrown in, for the pittance of $5,000,000. One of these nitrate plants has cost $67,000,000 and the other $13,000,000, while the Government has spent nearly $5,000,000 on the Warrior steam plant alone. This means that property which has cost $85,000,000 is to be sold outright to Mr. Ford for $5,000,000, which is less than one-third of the scrap value of this important property. But why should these properties, or any part of them, be scrapped or even sold at scrap figures, when they represent an investment which is now greatly needed to be put to use as a going concern to serve a most imperative public need?

Again, why should $60,000,000 more of public money be expended at Muscle Shoals at this time? Mr. Ford is asking the Government to build now Dam No. 3 exclusively for his own private purposes. There is now no public need that will justify the building of that dam. Every dollar put into it would be an unwarranted expenditure of public money for private use and profit.

Under such conditions the inadequate sum of Mr. Ford's offer for maintenance and the small sum which he proposes to put at compound interest for 100 years to amortize the investment made pales into insignificance, even if the Government should seriously consider making any kind of lease for the term of 100 years. Besides the Government is required to purchase the interest of the Alabama Power Co. in the Warrior steam plant, which amounts to several million dollars and which may lead to long and expensive litigation, to say nothing of the threatened litigation from the Air Nitrate Corporation, if the nitrate plants shall be sold instead of leased. Thus there are two basic defects in Mr. Ford's offer: (*a*) It is not a good business proposition on the part of the Government; (*b*) it defects the purpose of the Government as declared in the national defense act by diverting the public money already invested, and to be invested, largely to serve the ends of a private monopoly, instead of using all of the same to serve the public welfare.

Under the Engstrum proposal the Government is required to spend only the amount of money necessary to finish Dam No. 2 and to redesign the two nitrate plants, which is estimated to be within $30,000,000. We agree to use all of the power that is necessary to run both nitrate plants at their full capacity, and besides to make nitrates regardless of whether the same can be made at 8 per cent or not. No one can now and probably no one will ever be able to make nitrates at any profit by the cyanamid process.

All the testimony before your committee shows that there is not any plant to-day for the fixation of atmospheric nitrogen which is able to produce it at a figure as low as Chilean nitrates are being sold at the present time, which is from $45 to $55 per ton. Therefore, Mr. Ford can not at present make any nitrates at 8 per cent profit, but he can make automobiles with greater profit at Muscle Shoals than he can at Detroit; here is the "nigger in the woodpile" in his proposal.

The Engstrum Co. proposes to run a research plant to develop improved methods for producing cheap nitrates, which will mean cheaper fertilizers. I submit that vastly greater results can be expected from a research plant operated under conditions where the whole purpose of the plant is to produce more and cheaper nitrates than under a lease where the making of nitrates will, at best, be a side issue. Under the proposal of Mr. Ford there will not be produced at Muscle Shoals any more nitrates at the end of 100 years than will be produced the first year of the lease. There will be little purpose in operating an efficient research plant when the Haber process has been discarded and in the face of a declared purpose never to increase the output of nitrates. The

fact is, there is not a reasonable ground for even a hope that Mr. Ford will ever develop any improved process for making nitrates at less than present prices.

The selling price of the Chilean product varies greatly and without any apparent cause. The price is largely arbitrary and is based apparently on "what the traffic will bear." Nitrogen is the most important and the most expensive ingredient of commercial fertilizer; therefore it is of first importance to the success of agriculture and to assure a lower cost of living to the consumers that nitrogen should be furnished much cheaper. Indeed, the food supply of the world is threatened by the scarcity of nitrogen. Besides, the only possible way to stop the growing migration from the farms to the cities is to make agriculture more profitable, and this can not be done except by a sufficient supply of cheap fertilizers. In this connection it is important to keep in mind the fact that the driving of our high-class yeomanry from the soil means the lowering of our standard of citizenship, and this is a matter of the gravest concern to any country, and especially to a Republic like ours.

To meet this serious situation we propose to sell the nitrates to be produced at both plants at Muscle Shoals at a price lower than the cost of the Chilean nitrates and at a price to be fixed by the Secretary of Agriculture. This means that all the nitrates produced will be sold at a loss for the present of, say, from $5 to $10 per ton. To cover this loss, we propose to sell at wholesale all of the excess power produced at Dam No. 2 not needed to run the two nitrate plants and to set aside one mill for each kilowatt hour of power sold to finance or to subsidize the making and selling of nitrates and fertilizers at a price below present cost. This arrangement, it is hoped, will be of short duration, because the whole world expects early improvements to be made in the Haber process, by which a larger amount of nitrogen can be taken from the air at a cost much below the present selling price of Chilean nitrates.

When that hour arrives then the 1 mill per kilowatt hour for power sold will be turned by our company into the Treasury of the United States. Our company does not propose to ever make one dollar of profit on the nitrates and fertilizers produced; our profit will be derived entirely from the amount at which we may be able to sell power above the 1 mill per kilowatt hour. On the estimated production of 440,000 kilowatts at Dam No. 2 this 1 mill per kilowatt-hour will mean an income to the Government on the new investment on Dam No. 2 of $3,500,000 per year, every dollar of which will go into the Treasury of the United States or be used in the making of cheap nitrates and cheap fertilizers. Here is a return of $3,500,000 on an investment of $30,000,000, as against Mr. Ford's 4 per cent return, which is $2,400,000 on an investment of $60,000,000.

When the need for more nitrates calls for the building of Dam No. 3, and it will come within 10 years or less, and another nitrate plant is placed by Dam No. 3, then the Government will begin to receive 1 mill per kilowatt from that power also; and if the power developed shall equal the output at Dam No. 2, then the return to the Government on the investment at both dams will be doubled, or $7,000,000 a year, while Mr. Ford's offer of 4 per cent is only $2,400,000 for all of the power from both dams.

But great as is the cash return from the Engstrum proposal above that under Mr. Ford's proposal, yet the benefits to agriculture and to the public generally which will result from furnishing nitrates at less than 8 per cent profit, and especially from furnishing an ever-increasing quantity to meet the growing demands, are manyfold greater.

The Ford proposal must be accepted or rejected as a whole. The Engstrum proposal is divisible, the construction and the lease for operation are separate and distinct. If the Government prefers itself to finish Dam No. 2 and redesign the nitrate plants, then we will lease the property when it is ready to be operated; otherwise, we are ready to handle the construction also under the terms of our proposal.

Respectfully submitted,

MARION BUTLER.

(Thereupon the committee went into executive session, after which it adjourned to meet to-morrow, March 8, 1922, at 10.30 o'clock, a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Wednesday, March 8, 1922.

The committee met at 10.30 o'clock a. m., Hon. John C. McKenzie (acting chairman) presiding.

Mr. MCKENZIE. Before proceeding, I would like to have it stated in the record that Congressman Fields, of Kentucky, who has been very faithful in his attendance upon the hearings of this committee, is ill this morning and will not be able to be present.

I understand that our colleague, Mr. Bankhead of Alabama, is present and desires to make a statement.

Mr. BANKHEAD. Mr. Chairman, by an arrangement I had with the chairman of the committee, he very kindly consented that the Alabama delegation might have an opportunity to present briefly our position on this question, and it has been agreed that there shall be three short addresses made, and Mr. Oliver will make the first statement, followed by Judge Almon, and I shall make a very brief concluding statement.

Mr. MCKENZIE. Just as you wish, Mr. Bankhead.

STATEMENT OF HON. WILLIAM B. OLIVER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA.

Mr. OLIVER. Mr. Chairman, the Alabama delegation has received a letter from Hon. B. M. Allen, of Birmingham, Ala., who presided at a large mass meeting in Montgomery on Wednesday last, at which certain resolutions were adopted, and he has requested that the resolutions be read to the committee, and I desire to now read them. They are very complete and informing, and set forth in a forceful, proper, and accurate way the attitude of the people of Alabama on the subject to which the resolutions relate.

MEMORIAL TO THE PRESIDENT AND CONGRESS OF THE UNITED STATES AND THE COMMITTEES OF CONGRESS, ADOPTED BY THE STATE-WIDE MASS MEETING HELD IN THE CITY AUDITORIUM AT MONTGOMERY ON WEDNESDAY, MARCH 1, 1922.

We, citizens of Alabama, 5,000 strong, representing county governments, municipal authorities, women's clubs, labor bodies, chambers of commerce, civic bodies, and farmers' organizations from every quarter of the State, in mass meeting assembled at Montgomery, with full confidence in both the justice and wisdom of the President and Congress, do hereby declare:

That while the entire Muscle Shoals stretch of the Tennessee River lies within the borders of this State, the right to control and regulate the river in the interest of the Nation's commerce has been ceded by the State of Alabama to the Federal Government. We recognize the fact that Muscle Shoals is the property of the Nation, belonging alike to the people of all of the States, and, while we claim no greater right than any other State to say what shall be done with Muscle Shoals, we believe that we but exercise the guaranties of the Federal Constitution when we petition Congress that this great national asset be not employed by the Government as an instrumentality for fastening upon us and upon our children and our children's children the yoke of an oppressive and burdensome monopoly.

We affirm that the Alabama Power Co. now owns and controls a number of splendid power sites on the Coosa River in this State; that it owns and controls all of the available power sites on Little River in Alabama; and that it owns the wonderful power site at Cherokee Bluffs on the Tallapoosa River in this State; that in the 14 years since its incorporation it has built one power dam in this State and commenced work on one other dam; that at the present rate of development of the power potentialities already under the control of this corporation more than 100 years will go by before all of these dormant water powers are harnessed; that it has been the policy of that corporation to develop only such power as can be sold in small units and at high prices; that controlling as it does all of the great water-power sites in a State blessed by God Almighty with wonderful power possibilities, it, a foreign-controlled corporation, is in position to litigate with any American-owned organization which may seek to develop any one of Alabama's wasting water powers, just as it now threatens to litigate with Henry Ford, or with the Government, if either seeks to build Dam No. 3 at Muscle Shoals, or to control the Government-built steam plant and transmission line at Gorgas; that in spite of the fact that this foreign-owned corporation has long enjoyed exemption from taxation in this State, it has been busy ever since its entrance into Alabama in preempting every great power site within our borders, and in so copper riveting its hold on all of Alabama's great hydroelectric potentialities as to prevent for all time their development by any possible competitor; that it has been its policy to buy these power sites at farm-land prices and to hold them in perpetuity as power sites; that it already controls the utilities in our principal cities and is year by year securing the control of the utilities in our towns and villages; and that if it secures Muscle Shoals it will have perfected its control of all of our great water powers and will hold in its selfish grasp all of these instrumentalities, placed within our borders by a beneficient providence for the promotion of the commercial and industrial welfare of all the people.

We hold that it would be a travesty on legislation if, after many years of congressional consideration of how best to conserve the power in our navigable streams for the benefit of all the people and how most surely to preserve them from being used as instruments of monopoly, the Nation's greatest water power should be handed over to the Alabama Power Co. under the national water power act; and we

Further hold that it would be the quintessence of legislative folly for the Government, after 10 years of investigation as to how best to free the United States from its dependence upon a foreign power for its supply of nitrogen for explosives, in the event of war, and after spending millions of dollars in the construction of the greatest nitrogen fixation plant in the world, to turn over the only power capable of successfully operating the nitrate plant to a corporation owned and controlled by foreigners.

We remind Congress that just as the Alabama Power Co. has returned evil for good to the people of Alabama, so it is the one corporation whose dealings with our country in the grim emergency of war was so shameless, selfish, and conscienceless that when its conduct was investigated by a select committee of Congress the minority members of this committee joined with the majority in denouncing its brazen and sordid betrayal of its duty to a war-beset nation.

Again affirming our utmost confidence in the ability and the desire of the President and the Congress of the United States and the committees of Congress to reach the soundest solution of the pending questions relating to the disposition of Muscle Shoals, we wish to express ourselves with regard to Mr. Henry Ford's proffered contract with the Government. The subject is of such vital interest to the people of Alabama that with greatest enthusiasm they have assembled in this meeting for the purpose of making this memorial:

Upon mature deliberation, we, as citizens, do express our firm conviction that it is to the best interest of the United States and to the interest of the people of Alabama that the offer of Henry Ford be accepted and concluded as a binding contract, and for the following among other reasons:

The acceptance of the Ford offer would insure the operation in Alabama of at least two great organizations engaged in the development and sale of hydroelectric energy, and would further insure competition in the distribution and sale of power throughout the territory which can be reached by transmission lines from the several power sites on the Tennessee River whose development is within the contemplation of the Ford offer.

The Ford offer insures the operation of United States nitrate plant No. 2 for a period of 100 years for the production of fertilizers in time of peace and for the production of nitrates for explosives in the event of war.

It insures to the millions of farmers throughout the United States, whose organizations have with unanimity indorsed the offer of Henry Ford, the continuous operation of this Government-built plant for the production of nitrate fertilizers in competition with the present producers of nitrates, by a company whose profits will be limited to 8 per cent, and in sufficient volume to have a controlling influence in fixing the price of nitrates and nitrate fertilizers for agricultural uses.

The Ford offer insures to the people of the United States the operation of nitrate plant No. 2 and its maintenance in such a constant state of readiness, with a trained force of operatives, as to guarantee to the Government and its citizens an independent, internal supply of nitrates, in exact accord with the announced intention of Congress as expressed in section 124 of the National Defense Act of 1916.

The Ford offer guarantees the construction of Dam No. 3, and makes provision for use by the people of the United States for purposes of navigation of one of the country's largest and most important rivers which is an integral part of the great Mississippi River waterway system.

In the consideration given to the various offers for Muscle Shoals much has been said about the profit and loss that would accrue to the Government of the United States and to its people from the acceptance or the rejection of the various offers. We respectfully urge that a plan which looks to a constant supply of cheap fertilizers for the farmers of the Nation through a period of 100 years, which insures to American industry during that period the use of nearly 1,000,000 horsepower of electric energy, which provides for the security of the Nation in the event of war, and which guarantees the navigability of one of the country's greatest rivers for all time. These continuing additions to the resources of the Nation, if it were possible to express them in terms of dollars, with interest at 4 per cent, will in the course of 100 years add so vastly to the wealth of the Nation and the prosperity of its people that any difference in the price of the nitrate plant as fixed in the several offers, and any difference between the purchase price offered and the estimated possible scrap value of the property, is dwarfed into insignificance.

With these considerations in view and having in mind the freedom of our own people from a galling and oppressive water-power monopoly, the freedom of the American farmer from a burdensome and grinding fertilizer monopoly, the opening of a great river to navigation, and the security of the country in the event of war, we urge the President and the Congress of the United States to accept the offer of Henry Ford, whom we verily believe seeks through his offer to dedicate to the American people and especially to the farmers of America his genius and his fortune.

We indorse the sentiment "America first" and Muscle Shoals first for Americans, and above all, for American farmers. Henry Ford is a typical American, who by his genius has done more for country people and country life than any other man of his time. A man who has the trust and confidence of the great masses of the common people, as evidenced by the resolutions adopted by every gathering of plain, ordinary Americans, including the representatives of 4,000,000 farmers, who have given voice to their sentiments in regard to his proposal for the development of Muscle Shoals.

We believe the issue in Congress is clearly drawn. It is a contest between the people and the interests which control the people's fertilizer and power resources.

On behalf of the army of the unemployed, in the interest of the great body of plain American citizens, in the name of millions of perplexed and burdened farmers, we beg our President and the Congress of the United States and its committees to promptly accept the offer of Henry Ford.

J. L. ANDREWS.
FRANCIS PATTERSON WALKER.
J. J. BUFFINGTON.
H. C. RANKIN.
EDW. A. O'NEAL.
S. P. MCDONALD.
CHAS. L. HAROLD.
EDWARD DOTY.

This resolution was unanimously adopted.

B. M. ALLEN, *Chairman.*
C. E. JOHNSON, *Secretary.*

MARCH 1, 1922.

This resolution, I feel, represents the overwhelming sentiment of the people of Alabama. The statement by Governor Taylor before this committee is evidence that it represents the sentiment of the people of Tennessee. The unanimous indorsement of the Ford offer by our colleagues from the sister States of Mississippi, Louisiana, Georgia, the Carolinas, Florida, Arkansas, and Texas show that it represents the sentiment of these States. Allusion has been made to its strong indorsement by every farm organization in the country, South, East, West, and North. Likewise, you have before you a most informing statement by the vice president of the Mississippi Water Valley Association, in which without reservation he states that it represents the sentiment of the many States included in that great organization.

It is interesting, when we come to consider the proposal before you, to note that this was a project which Congress determined on prior to the war, to be primarily devoted to the Nation's use in war and to the farmers' use in peace; and it is not surprising that the farmers, for whom it was built and constructed to serve in peacetime, should now manifest great interest in the offer of one who, being possessed of financial ability and who enjoys their confidence, is willing to develop it along the lines that Congress declared should be its mission in peace.

The President, in recognition of the importance of agriculture, perhaps may have had this as well as other projects in mind in that remarkable address which he delivered on January 23 to the gathering of farmers in the city of Washington, and I beg to invite your attention to some striking excerpts from that address showing the present condition of agriculture and the importance, as recognized by the President, of taking definite action along constructive lines at this time:

"If agriculture is to hold its high place there must be the most liberal policy in extending its opportunity.

"There must be a new conception of the farmer's place in our social and economic scheme.

"I choose to call the vocation of the farmer the most useful, and it ought to be made one of the most attractive, among all lines of human effort.

"Concerning the grim reality of the present crisis in agriculture, there can be no differences of opinion among informed people.

"You men are thoroughly familiar with the distressing details of present conditions in the agricultural community. The whole country has an acute concern with the conditions and the problems which you are met to consider. It is a truly national interest and not entitled to be regarded as primarily the concern of either a class or a section.

"There is every reason for us to consider those permanent modifications of policy which may make relief permanent, may secure agriculture, so far as possible, against the danger that such conditions will arise again and place it as an industry in the firmest and most assured position for the future.

"Up to this time railroad construction, financing, and operation have been unscientific and devoid of proper consideration for the wider concerns of the community. To say this is simply to admit a fact which applies to practically every railroad system in the world. It is equally applicable to the railways of continental Europe, in whose development considerations of political and military availability have too far overweighed economic usefulness. In America we have too long neglected our waterways. We need a practical development of water resources for both transportation and power. Waterway improvement represents not only the possibility of expanding our transportation system, but also of producing hydroelectric power for its operation and for the activities of widely diffused industry."

This was a pleasing statement of what Congress in 1916 had the vision to see, and to seek, by the national defense act, to make some helpful provision for.

Is it surprising, then, when the war was over and the proclamation of peace issued, that the farmers should take account of the fact that here at Muscle Shoals is a plant, built with Government money, pursuant to the directions of Congress, as contained in this 1916 act, now practically complete and ready to serve the purpose which Congress intended. It has its power plant at Gorgas, on the Warrior, its transmission line from there to the nitrate plant, all built with Government money. There is now needed only an expenditure of some ten or twelve million dollars which Mr. Ford offers to supply to put Nitrate Plant No. 2 in condition where it will be prepared, from current supplied by the Gorgas steam plant, to begin the manufacture of fertilizers for the farmers. The farmers look upon it as their property, because Congress dedicated it to their use in the national defense act of 1916, and it is not surprising that they have begun to make an appraisal and survey of its possibilities.

Congress, at its last session, thought it would be unwise for the Government, without a definite policy of operation being first determined on, to expend further money in the completion of the power dams. Since that time, there has come an offer, and it stood as the only offer for more than six or seven months, discussed pro and con in all sections of the country. It was that offer, thus considered, thus dissected, that received the hearty approval of the farmers of the Nation, and of every business interest, except those in some way linked up with power or fertilizer companies, or like projects. So I think

the offer is now presented to the committee in a rather unusually strong way, and the farmers are asking for nothing more than present assistance from Congress for its cooperation in making a working concern of that plant, built with Government funds, pursuant to the direction of Congress to aid agriculture in peace.

And now, if I may, and I know the committee will understand that no discourtesy is intended, because I have the highest regard for every member of the committee, but in view of many, I fear, misleading press reports, I have hurriedly drafted some thoughts which I wish to leave with the committee for its consideration.

Whether fairly spoken or rightly understood, it is a fact that the Committee on Military Affairs, according to some press reports, makes the impression on those who discuss the Ford offer and the Warrior River phase of the case, that the committee shows no firmness, nay, I had almost said no courage, about the Warrior River case, and, after a fashion, is made to appear as throwing up its hands, since members of the committee are reported as perhaps urging that Mr. Ford and his representatives should in some way negotiate with the Alabama Power Co. and come to an understanding with the Alabama Power Co. about the Gorgas plant.

It must not be forgotten that Mr. Ford made no proposition to the Alabama Power Co., has no grounds upon which to approach the Alabama Power Co., has no business connected with the Government's Warrior River steam plant, or any other matters, to discuss with the Alabama Power Co., and even if Mr. Ford and his representatives were invited by the Alabama Power Co. to discuss the Warrior River case, consider, please, what a disadvantage Mr. Ford is at, when the impression goes out through the press that the Government is helpless. It is unfortunate for the committee to be placed in a position. whether rightly or not, I do not know, of not showing firmness and serving notice on the Alabama Power Co. that the Government can protect and will enforce its legal rights in the courts.

I respectfully submit, the public—the people of the country—will reasonably expect that Congress will find a way to straighten out the Warrior River difficulties and others—that the Congress will legislate its way out of the difficulties. if there be any.

Mr. PARKER. Is that a quotation from something you are reading, Mr. Oliver?

Mr. OLIVER. No; I prepared it myself.

Mr. PARKER. It is your own statement?

Mr. OLIVER. Yes, sir. I have referred, Mr. Parker, I will state, to impressions that I fear the public may have from newspaper reports.

Mr. PARKER. I heard the first statement, and I did not know whether the last statements were quotations or not.

Mr. FISHER. Mr. Oliver, has that statement you are reading from gone broadcast to the country—that the committee, perchance, has a lack of courage in handling the Ford offer?

Mr. OLIVER. I said that the press reports had carried, whether rightly or wrongly—perhaps there have been no such interviews, but, anyhow, in some papers there have been reported interviews, sometimes not mentioning by name the members of the committee, but saying that interviews with the committee show that perhaps nothing can be done, in view of the fact that we would apparently be tied up in litigation for years with the Alabama Power Co.

Mr. FISHER. Do I understand, then, that your inference is one obtained from newspaper reports and not from the hearings before the committee?

Mr. OLIVER. Absolutely. I thought I made that clear in my statement. I simply say that I fear that is the impression the public will have from these—I am willing to concede—unauthorized publications of reported interviews.

The following, taken from an editorial from Power, exactly expresses the thought I am trying to convey to you, and it is going to be also the expectation expressed by the country in regard to the Warrior River case:

"As concerns the legal aspects of the matter, Mr. Ford has every right to expect clear title to the properties should his proposition be accepted. The fact that officers of the Ordnance Department had a Government power plant and transmission line built on property belonging to a private company when under the war powers it could have exercised the right of purchase, and this without consultation with the Judge Advocate General's office, may be a matter for Congress to inquire into, but it places no obligation upon Mr. Ford or any other bidder. It is a matter for the Government to straighten out first."

Evidently they had gotten the impression that in some way the committee expected Mr. Ford to negotiate, and I do not think the committee has ever said that. I do not think you have said anything to justify that statement being made in the press, but, nevertheless, it is being said—and, I think, to the injustice of the committee. As Judge Almon says, I do not mean to charge that with reference to all press reports. Many of the press reports have been entirly fair and have not sought to attribute to the committee suggestions of this kind.

The Judge Advocate General having advised the committee that the Government can acquire the transmission rights of way, powerhouse sites, Government building sites at Gorgas, etc., I am sure that the committee will recommend to Congress the necessary legal steps to take in order to secure the Government's rights in such Government plant and transmission lines, and I am sure you will agree that it would be unfortunate and unjust to the committee for the public to get the impression that the committee shows lack of firmness or a disposition to throw up their hands in reference to the Gorgas plant.

Now, just let me say in that connection——

Mr. GARRETT. Before you leave that subject, have you a compilation of the press reports upon which you base that statement, except the article from Power?

Mr. OLIVER. One statement appeared in the press a few days ago quoting Mr. Kahn as indicating that he felt a commission would have to be appointed in view of the legal questions, and so on; and then another, I think, was reported either yesterday evening or this morning purporting to be an interview with Mr. Kahn in which he is quoted, in effect, that nothing can be done with the Ford offer, because it might involve a litigation of some three or four years, or something of that sort. Now, they doubtless have drawn a wrong inference from an interview with Mr. Kahn. I recognize he may feel that there is a legal question involved——

Mr. KEARNS. Would it not involve some three or four years of litigation?

Mr. OLIVER. I think not, Mr. Kearns. I think if the committee should recommend to Congress the acceptance of the offer, and Congress should by vote accept the offer and direct the condemnation of the Gorgas plant and the transmission line, you would see Mr. Ford in full control of it and operating nitrate plant No. 2 and turning out fertilizer in less than 15 months.

Mr. FISHER. That matter was suggested when you were before the committee and I asked you the question as to whether or not we could direct condemnation proceedings without first appropriating an amount of money to cover the cost of the land.

Mr. OLIVER. Yes.

Mr. FISHER. That question you were not certain about, and the matter is being investigated right now. Are you now prepared to state whether it is legal to proceed with a condemnation suit for the Gorgas plant—that property which the Government does not own there—without appropriating first some sum of money to cover the cost of the land?

Mr. OLIVER. I think you would have to appropriate some sum of money.

Mr. FISHER. That was just the question, and I ask you how much you thought ought to be appropriated.

Mr. OLIVER. In the case which Mr. Dent read to the committee the other day, and which seems to be an authority for every proposition I have assented in this case as to the Government's right to condemn, there is discussed that very point, and it is held that even though the amount appropriated was ascertained afterwards to be insufficient such fact is not fatal; so if you appropriated some reasonable amount and ordered condemnation, the condemnation proceedings could be begun at once. That very case answers fully the question, Mr. Fisher, I think.

Mr. FISHER. You recommend, then, without any consideration of the statement from the Secretary of War—and every officer, who had anything to do with the contract with the Alabama Power Co.—that we proceed to condemn without making any offer to settle the matter amicably prior to that time?

Mr. OLIVER. No; I have not said that. I simply said that some of these reports had created the impression that the negotiations, perhaps, ought to be made by Mr. Ford or his representatives; and that, so long as the Power Co. feels—from certain reported interviews—that the committee thinks the contract that they set up will prevent any action being taken, you can well understand how independent the Power Co. will continue to feel; and that is why I wanted to call the attention of the committee to the reports.

Mr. FISHER. I wonder if you are aware of the evidence which has been introduced before the committee about the intention of the War Department and the evidence of the officers, who handled the matter for the Government, and who stated that it was the intention, when they drew that contract, that the Alabama Power Co. was to buy the plant as a going concern and not as a salvaged concern?

Mr. OLIVER. Unquestionably.

Mr. FISHER. With that thought in mind, the Secretary thinks, and the other officers think, it is a moral obligation. Now, do you think we ought now, as a committee, to enter into negotiations for an amicable settlement with the Alabama Power Co. or do you think we ought to just order that direct condemnation proceedings be instituted?

Mr. OLIVER. I am very glad you ask the question, because it suggests to me that it is proper at this time to call your attention to the fact that it is but natural that some of the Ordnance officers in the War Department may feel very friendly to the claims and insistence of the Alabama Power Co., because, unfortunately, it was through them or some emergency officers in their bureau, that the Government was imposed upon in this contract? You gentlemen will recall how, without defense from any one, when this matter was before Congress last year, Mr. Graham, of Illinois, and others, condemned not only the Alabama Power Co. but also the officers of the Ordnance Department for their conduct in reference to this very contract? Read the speech of Senator Lenroot, in the Senate, and read the remarks of Senator Borah in reference thereto, in which he, after Senator Lenroot had explained to the Senate the character of the contract entered into by Ordnance officers with the Alabama Power Co., very properly inquired: "And are those officers still with the Government?"

Mr. FISHER. May I ask whether or not anything was done as a result of that investigation and condemnation toward straightening out the Government's rights at Gorgas?

Mr. OLIVER. I do not think anything has been done; but I feel sure——

Mr. FISHER (interposing). Any resolutions introduced?

Mr. OLIVER. I think this committee will take action when they come to pass finally on this matter, and will direct what should be done; and it was for that purpose that I called attention to what might be a wrong impression, doing a great injustice to the committee and to Congress.

Mr. PARKER. That is just what I want to speak of.

Mr. OLIVER. Yes.

Mr. PARKER. You call attention to the impression that may go forth if we take one action or another. You do not mean to say we ought to consider for a moment any such impression in doing exactly what we think right about this case.

Mr. OLIVER. I feel sure the committee will do what it thinks is right.

Mr. PARKER. Then I do not think it worth while to suggest then that we may be subject to a newspaper attack.

Mr. OLIVER. I submit that I have my own opinion about that.

Mr. PARKER. Your own opinion.

Mr. OLIVER. And I think you will agree with my position when you understand my purpose in calling the attention of the committee to that fact.

Mr. PARKER. It is a sort of threat.

Mr. OLIVER. No; it is no threat in the slightest. In reply to Mr. Fisher's questions, that the Ordnance officers claim this and that, I have called your attention to what Congress thought about it, and let me call your attention to what members of your committee have said about it. Take Mr. Miller, for instance.

Mr. FISHER. My suggestion was not that we ought to abide by what was said, but we ought to investigate it further. We have not had Colonel Joyes before us, and Colonel Joyes is the man who was at the head of that division.

Mr. OLIVER. Yes.

The CHAIRMAN. I have made an arrangement to have him before us on Friday morning. I have already been working at that, Mr. Fisher.

Mr. OLIVER. And my recollection is that Colonel Joyes was perhaps the officer that Senator Lenroot had in mind when he was discussing the question and the inquiry of Senator Borah was made, to which I have referred. Reverting to Mr. Miller's statement here on page 668, he said to Mr. Martin, president of the Alabama Power Co.:

"I see very plainly what the contract is, but I have been wondering if there is any other human being that would put a dollar into an enterprise on

such a basis as the United States put its money in with you. Can you conceive of any institution in the world, or can you conceive of the United States, except in the extremity of war, making such a contract?

"And I am afraid, Mr. Martin, that I am forced to believe that you took advantage of the Government in its extremity of war."

And further:

"And I say, sir, that it looks to me as if the Alabama Power Co. had ingeniously interwoven the Government's interest along with yours to such an extent that they never could be segregated and that you would be the only man that could become the purchaser."

Further:

"It is plain that they got the power and I see the end of the horn the Government is coming out in thing thing, too, notwithstanding the great patriotism that you suggested to the committee his morning, Mr. Martin."

And, Mr. Miller was but voicing the sentiment of Congress, as we understood it, and as it was expressed on the floor of both the House and the Senate last year. That is why I say that we, and I know the committee do not want the public to have the impression that the committee is having great trouble in even giving further consideration to the Ford offer, so long as the Alabama Power Co. stands up and threatens the Government with a lawsuit.

Mr. KEARNS. Mr. Oliver, this contract does not differ from thousands of other contracts made with the Government, does it?

Mr. OLIVER. I do not think you will find any other contract like this, for this reason, Mr. Kearns: Here was a selection of the site of a national project at Muscle Shoals——

Mr. KEARNS (interposing). I understand that, but my point is——

Mr. OLIVER (continuing). And the very company that Congress, in the act of 1916 had served this notice on, "the Government does not want you and will have nothing to do with you in building its nitrate plants,"—the Alabama Power Co., was responsible for the proviso that was put in section 124 of the National Defense Act of 1916. Yet, with that in mind, we find them in conjunction with some emergency officers, or perhaps some regular officers of the Ordnance Department, making an agreement looking to the acquirement of large expenditures by the Government, for what purpose? Expenditures looking to the supplying of power to this Muscle Shoals project, which in peace and in war, was to be devoted to a public purpose. I say that you will find no contract during all the war, where a party, served with notice as was the Alabama Power Co. in 1916, seeking in a selfish way, as indicated in the questions by this committee to the president of that company, to have the Government's money so expended at its plant and on its property that it could never be separated therefrom, and the Alabama Co. would thus become the only possible purchaser.

Mr. KEARNS. Is the Government so weak that a bunch of men can take that advantage of it?

Mr. OLIVER. Absolutely not, and I do not believe a single member of this committee thinks so.

Mr. KEARNS. The Government certainly has been weak in all the contracts made practically during the war.

Mr. OLIVER. Unfortunately the contention of the Alabama Power Co. has been that the Government is so weak that it can not help itself now. I do not believe that you and other Members of Congress will fail to find a way in which the Government, if that property be needed in the operation of a great national project can acquire it. We are not helpless, and it would be an injustice to Congress and to this committee, to have the impression go out that any Member of Congress or any committee of Congress felt that the claims of the Alabama Power Co., made under a contract, characterized by every member that ever discussed it, as unconscionable, overbearing, and void, could prevent the consideration of an offer for the plant, and I do not believe it will.

Mr. STOLL. Is the fraud that vitiates the contract apparent on its face?

Mr. OLIVER. I think section 22 answers it. That section is a complete answer to the claim of the Alabama Power Co. that any one had authority on the part of the Government from Congress to bind the Government in the alleged sale of the plant at Gorgas. I think you, Mr. Stoll, very clearly, by your questions to Mr. Dent, the attorney of the company, demonstrated that point beyond question.

Now, gentlemen, I had not intended taking up this much time, and in conclusion I simply wish to say I recognize that this is a matter of vast importance

to the Nation. I question whether you can find any question measuring up to it in importance from the farmers' standpoint that has been presented to Congress since the war. Fortunately it is a question that in no sense concerns alone any section. It in no sense has ever at any time been considered as partisan, and I know that in approaching the rightful solution of this problem and in seeking to provide for the future operation of this plant, in accordance with the direction of Congress, as expressed in the 1916 national defense act, this committee will find a way whereby it can be beneficially used to serve those for whom it was primarily intended to serve in times of peace.

STATEMENT OF HON. EDWARD B. ALMON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA.

Mr. ALMON. Mr. Chairman and gentlemen of the committee, during the recent World War the Government constructed at Muscle Shoals, in the Tennessee River, in Northern Albama, two nitrate plants, known as Nos. 1 and 2, for the fixation of atmospheric nitrogen to be used for the manufacture of explosives for war purposes and fertilizer in peace times. The war-time cost of these plants amounted to a total of $85,423,078.73, including the Gorgas steam plant and the Waco rock quarry, which is about twice the amount of cost of construction in normal peace times. In addition to this, about $17,000,000 has been expended on the Dam No. 2 at Muscle Shoals, known as Wilson Dam. It was about 30 per cent complete when work was suspended last May, the appropriation of $10,000,000 to continue work on the dam having been defeated by 11 votes in the House on February 25, 1921. The dam is a part of this development and is to furnish the power to operate the plants.

At the small nitrate plant, No. 1, the synthetic process of the General Chemical Co. which had not been developed on a commercial basis, was used. The Haber process was not available in this country at that time, but is now and is being used successfully, I am informed, in a small plant at Syracuse, N. Y.

Plant No. 1 was an experimental plant. Certain parts of it were not a success. The War Department has decided not to ask Congress for the large amount of money that would be necessary to make it a success but has recommended that it be salvaged.

The large plant, No. 2, at Muscle Shoals uses the cyanamid process of the American Cyanamid Co. The cyanamid process for the fixation of atmospheric nitrogen is one of the oldest and best. It is being used extensively and successfully in the European countries, and was during and before the World War. Plant No. 2 was built in about eight months, being completed just as the war ended. It is 100 per cent in quantity and quality of production contracted for, viz, 110,000 tons ammonium nitrate annually, as has been demonstrated by a number of Government tests. Both plants are now being kept in a stand-by condition.

The development at Muscle Shoals is not local; it is a great national project and is nation-wide in the uses for which it was intended. This development, as planned in the Ford offer, will be of great benefit to the entire country. Muscle Shoals was selected for this development on account of its natural advantages, namely, within the safety zone prescribed by the military authorities; the greatest water power east of the Mississippi River; in close proximity to the phosphate beds, coal, coke, limestone rock, and all other raw materials in inexhaustible quantities needed in the manufacture of munitions and fertilizer; climatic conditions ideal; central point for the distribution of fertilizer, transportation facilities good both by rail and water.

This committee in 1916 originated the law which resulted in this development. At the earnest solicitation of those who were interested in the question of national defense and agriculture, provision was made in section 124 of the national defense act, approved June 6, 1916, for the construction of one or more nitrogen plants to be used for the manufacture of explosives in times of war and fertilizer in peace time, to be operated by steam or water power, one or both. As a result of that legislation the Government, through its authorized representatives, made these improvements at Muscle Shoals. In the consideration of this question it is most important that you bear in mind that these nitrate plants at Muscle Shoals and the water-power development which has been commenced was just as much intended for the production of cheaper and better fertilizer for the farmers in times of peace as for the manufacture of explosives in times of war. This was clearly the expressed intention of Congress when their construction was authorized.

After our experiences during the World War everybody agrees that this country should never again be dependent upon a foreign market for a supply of nitrogen in times of emergency, and all agree that nitrate plant No. 2 at Muscle Shoals should be preserved and maintained as a part of our national defense.

Soon after the beginning of the present administration, Secretary of War Weeks announced that he would not recommend to Congress the appropriation of funds with which to complete Muscle Shoals Dam No. 2, known as the Wilson Dam, unless he was first assured that there would be a market for the power developed by its completion that would justify the additional expenditure. In order to secure this information the Secretary of War requested the Chief of Engineers of the War Department to ascertain from water-power companies and others who might be interested in using a large amount of water power if they would be interested in taking the power if the dam was finished.

As a result the Chief of Engineers received several replied—one from the Southern Power Co., in which it was not only stated that they would not be interested in taking the power but strongly condemned the project, declaring that it was impracticable and worthless, and recommended and advised against the completion of the development. Muscle Shoals has become very valuable in the estimation of the Southern Power Co. and other water power and fertilizer interests since Mr. Ford made his offer. Why this sudden change or heart?

As a further result of the policy of Secretary of War Weeks, an offer was made by Henry Ford which made provision not only for the completion of the Wilson Dam but for the construction of the other dam, No. 3, thereby developing all the water power at Muscle Shoals and removing all obstruction to navivation, and also providing for the operation of the large nitrate plant, No. 2, for the manufacture of fertilizer.

The Ford offer was made on the 8th day of July, 1921. Negotiations were conducted between Mr. Ford and the Secretary of War for several months, and no other offers were made until after the Ford offer was sent to Congress, February 2, 1922.

While negotiations were pending between Mr. Ford and the Secretary of War, the president of the Alabama Power Co. announced, through the press and otherwise, that the Alabama Power Co. would not submit an offer for the Muscle Shoals property, but after the hearings by this committee on the Ford offer had commenced, and when it became apparent that the Ford offer would in all probability be accepted by Congress, the Alabama Power Co. submitted an offer on the 15th of February, 1922.

The Secretary of War announced that he was without authority to dispose of this property and sent both of the offers to Congress with his comments, but without recommendations, and they were referred to the Agricultural Committee of the Senate and this, the Military Affairs Committee of the House.

Extensive hearings have been held before this committee during the past three weeks, and have attracted nation-wide attention. The hearings are now about completed. Both committees are planning to make a trip of inspection to Muscle Shoals at an early date. You have been very patient. You have given all a hearing who desired to be heard. I have attended all of the hearings and have made a careful study and analysis of all of the offers for Muscle Shoals. My purpose in addressing you is to show you, if I can, that it will be to the interest of the Government and the public to recommend the acceptance of the offer of Henry Ford and reject that of the Alabama Power Co. I shall first discuss the offer of Henry Ford and then the offer of the Alabama Power Co.

Mr. Ford's offer of July 8, 1921, as modified on January 11, 1922, was put in contract form by the Judge Advocate General, and is made Exhibit C on page 14 of House Document No. 167.

Three modifications, as I remember, have since been agreed to by Mr. Ford to clarify some parts of the agreement, namely, (1) that his company, provided for in the first section of the agreement, is to begin with at least $10,000,000 paid-in capital stock; (2) that section 14 be modified so as to make it clear that nitrate plant No. 2 is to be operated to its full capacity during the entire period of the lease for the manufacture of fertilizer; (3) that the board, nominated by the farmers' organizations and appointed by the President, as provided for in section 15 of the agreement, shall control the sale and distribution of the fertilizer manufactured at plant No. 2, so that it will be sold direct to the farmers at not more than 8 per cent over and above the actual cost of production. [Reading:]

"Mr. Ford's proposal consists of two parts: (1) To lease the dams for 100 years, and (2) to purchase the nitrate plants and accessories.

PART 1—OFFER TO LEASE THE DAMS.

Provisions of offer.

1. Mr. Ford agrees to pay $55.000 annually for the maintenance of dams, locks, etc., making a total payment in 100 years of	$5,500,000
2. He agrees to pay interest at 4 per cent on whatever the cost may be for completing both dams. If this amounts to $42,000,000 (the estimate of Mr. Ford's engineers), the total in 100 years under Mr. Ford's plan of payments will amount to	161,040,000
3. He agrees to a plan of amortization sufficient to retire $49.000,000 in 100 years	49,000,000
Total payments to the Government under Ford offer during 100-year-lease period	215,540,000

Cost of dams (expended and proposed).

There has been expended to date in building Dam No. 2, about		17,000,000
Cost of completing Dam No. 2	$23,000,000	
Cost of building Dam No. 3	17,000,000	
		40,000,000
Total Government investment in Muscle Shoals dams and hydroelectric plants will amount to a total of		57,000,000

"Charges to navigation: Deducting the $49,000,000 which Mr. Ford repays from the $57,000,000 total cost, leaves $8,000,000 unrefunded, which is less than the amount stated by the United States engineers as chargeable to navigation, their prewar estimate being $8,575,000. (See H. Doc. 20, 63d Cong., 2d sess., p. 4, par. 6.)

"The United States engineers have more than once recommended that $8.575,000 should be charged to the navigation improvement of the Muscle Shoals stretch of the Tennessee River under the very plans for join navigation and power improvement now proposed.

"Earnings from Government peace-time investments compared with Ford offer: To meet the terms of the Ford offer and produce a proportionate return to the Government, the Reclamation Service, representing a Government net investment of $125,870,830, would have to show an annual gross income of $10.180,132, instead of $4,191,844, which it now shows. The Panama Canal, representing an investment of $380,554,949, would have to earn $32,450,886 gross revenue, whereas last year's total revenues were only $12,040,117. (Based on 1921 report.)

"PART TWO—OFFER TO PURCHASE NITRATE PLANTS AND ACCESSORIES.

"Provisions of offer: Mr. Ford offers to purchase nitrate plants Nos. 1 and 2, Waco quarry, and the Gorgas steam plant and its transmission line for $5,000.000. He also offers to maintain nitrate plant No. 2 in a state of readiness to be promptly operated in the manufacture of materials necessary in time of war for the production of explosives. Thus securing the benefit of its use for the purpose for which the plant was originally planned. The Government, therefore, retains every advantage of the nitrate plant in time of war, but pays nothing for the maintenance of the nitrate property in times of peace.

Salvage to Government from war-time investments compared with Ford offer.

	Cost of property.	Salvage received.	Per cent of cost salvaged.
Government property sold:			
Muscle Shoals nitrate plants	$85,423,078.73	$5,000,000.00	5.85
Old Hickory powder plant	80,000,000.00	3,500,000.00	4.28
Wooden ships, United States Shipping Board.....each	800,000.00	5,000.00	0.63

"On the basis of the price received for the wooden ships that were sold, Mr. Ford would have offered only $567,000 instead of $5,000,000 for the nitrate plants.

"Annual cash saving to Government by acceptance of Ford offer: The Ford offer when accepted will stop the following annual cash expenditures:

1. Guarding an maintaining nitrate plants and accessories (fiscal year ending June 30, 1921), depreciation omitted	$310,042.44
2. Guarding and maintaining uncompleted work at Dam No. 2 representing a yearly expenditure of	384,000.00
3. Maintaining Muscle Shoals Canal, average annual cost	53,079.00
Total annual cash saving	747,121.44

This is interest at 4 per cent on $18,678,000.

Cost to Government of the Delay in Accepting Ford Offer.

Average annual cash return to the Government under Ford offer	$2,155,400.00
Annual cash expenditures saved at Muscle Shoals by Ford offer	747,121.00
Total annual loss to Government by delay	2,902,521.00
Average monthly loss	241,877.00
Loss since Ford's offer was made 8 months ago	1,935,016.00

"The cost of the delay in accepting Mr. Ford's offer, as shown above, has already amounted to 1,935,016, and on the cost basis of the last fiscal year the cost is piling up at the rate of $8.062.50 per day.

As shown from the foregoing table of salvage to the Government from war-time investments, the Ford offer for the nitrate plants at Muscle Shoals will give the Government the highest rate of salvage it will have obtained from either of the war-time expenditures included in that list. The military cantonments constructed during the war which have thus far been salvaged have brought practically nothing. Many of them have been completely abandoned and their buildings are going to waste, for the reason that they are not even worth the cost of "scrapping."

When the fact is taken into consideration that Mr. Ford's offer for the nitrate plants imposes upon him the obligation to keep the plants in reserve, at his expense, for the use of the Government in time of war for the production of explosives, his bid looms large in comparison with the prices obtained for the other war-time investments, from which no further returns will be secured. So there has not been, and can not be, any just criticism of the amount offered by Mr. Ford for the nitrate plants.

Mr. Ford not only offers a very fair price for the nitrate plants, but agrees to keep nitrate plant No. 2 at Muscle Shoals in an up-to-date running condition and available to the Government without cost if it should ever be needed for military purposes and the manufacture of munitions. It is now in a stand-by condition, expensive to guard and maintain. The older it grows, the more expensive the maintenance charges will be. With the very best care it would rust out and greatly deteriorate in value. The fixation of atmospheric nitrogen is a comparatively new art, and it will be improved from time to time, and in order for this plant to keep pace with the progress of the art and be an up-to-date, going concern in the event of a military emergency it must be operated in peace time.

Besides the act of Congress making provision for its construction provided that it should be operated in peace time for the manufacture of fertilizer. So the acceptance of the Ford offer preserves this plant as a military plant and at the same time makes provision for its operation by private capital in peace time for the manufacture of fertilizer. The maintenance of the plant by the Ford Co., relieving the Government of all expense and keeping it in an up-to-date running condition, is of inestimable value and would save the Government many millions of dollars, besides the advantages to agriculture, the basic industry on which the success and prosperity of every other business depends.

Mr. Ford further agrees to operate nitrate plant No. 2 during the entire period of the lease to its full capacity in the manufacture of commercial fertilizer and sell direct to the farmers at a price not to exceed 8 per cent of the

actual cost of production, through a board nominated by the farmers' organizations and appointed by the President.

The present capacity of the plant would produce about 2,000,000 tons of fertilizer, which is about 30 per cent of the amount of fertilizer consumed in normal times. It has been clearly shown that with cheap water power the Ford Co. can make fertilizer at about one-half of the present price. The Nation's fertilizer bill is now nearly $250,000,000 annually. Suppose, for the sake of argument, that the operation of the Muscle Shoals plant should only result in a 20 per cent reduction in prices. That would amount to $50,000,000 a year saving to the farmers, and this amount for 100 years out on compound interest—as the opponents of the Ford offer have undertaken to do in claiming what Mr. Ford would make from the Government in compounding interest—would be over $5,000,000,000, saving to the farmers of the country.

Mr. Ford's agreement requires his company to be responsible for the upkeep and repair of the power houses and equipment at his own expense; to pay the Government $55,000 annually for the upkeep of the dams and locks which will save the Government the expense of maintaining the present imperfect facilities for navigation at Muscle Shoals, amounting to from $35,000 to $85,000 per annum; also to pay as an annual rental 4 per cent on the actual cost of the completion of the dams; and in addition to all this, create a sinking fund by paying to the Government $46,746 annually, which, if invested by the Government at 4 per cent interest, would amount to $49,071,935 at the end of the lease; if invested at 4¼ per cent would amount to $58,570,003.

The Secretary of War, in his report to Congress discussing this part of the Ford offer (H. Doc. 167, p. 7), made the following statement:

"Should the dams be constructed at a cost of not to exceed $42,000,000, as estimated by Mr. Ford's engineers, there would be left to apply on the investment of the Government heretofore made whatever the amortization payments would produce in excess of the $42,000,000. If the amortization fund should be invested continuously at 4 per cent there would be at least $7,000,000 to be thus applied, but should it be invested at a greater rate of interest the amount would be increased as shown by the following table:"

Amount retired by Mr. Ford's sinking fund at various rates of interest, compounded semiannually.

Account of—	Semi-annual payments.	Life of fund (years).	Amount retired at following interest rates:				
			4 per cent.	4¼ per cent.	4½ per cent.	5 per cent.	6 per cent.
Dam No. 2	$19,868	94	$40,919,798	$48,783,949	$58,319,359	$83,718,097	$176,030,810
Dam No. 3	3,505	97	8,152,137	9,786,054	11,780,690	17,150,545	37,103,880
Total			49,071,935	58,570,003	70,100,049	100,868,642	213,134,690

NOTE.—Payments are to be made into sinking fund semiannually at the beginning of each semiannual interest period. This sinking (or retirement) fund has nothing to do with Mr. Ford's interest payments, but represents a separate fund to be invested at the highest interest rate obtainable for the purpose of returning to the Government within the lease period the largest amount possible, with the above semiannual payments, consistent with safe investment.

The Secretary of War found no fault with this part of the Ford offer, nor do I remember to have heard of any criticism of it by any member of this committee.

A group of powerful interests is flooding Congress and the country with all kinds of propaganda filled with false and misleading statements about Mr. Ford's plans and purposes. One very elaborate publication was issued purporting to tell the truth about Muscle Shoals, and a large part of it was an attempt to show that Mr. Ford would devote the Muscle Shoals plant to the manufacture of sulphate of ammonia, and this product would have but little effect upon the cost of fertilizer. Mr. Ford does not intend to produce sulphate of ammonia as a nitrogen fertilizer compound. He will, of course, produce ammonia by the air nitrogen fixation process and mix ammonia with phosphoric acid, produced electrically from phosphate rock obtained nearby, thus making ammonia phosphate.

The same publication states the cost of completing Dam No. 2 would be $33,000,000, and of Dam No. 3, $24,000,000, or $57,000,000 for the completion

of the dams. The facts are that experienced and responsible contractors have offered to complete Dam No. 2 for $23,000,000 and build Dam No. 3 for $17,000,000, making a total of $40,000,000 for both. The estimate of Mr. Ford's engineers is $42,000,000. The outside estimates of the engineers of the War Department is about $48,000,000, and they admit that it may be considerably less.

Mr. Ford, according to his offer, is to construct the dams under the direction of the Chief of Engineers of the War Department. It will be to his interest to do it as cheaply as he can, as he is to pay an annual rental of 4 per cent on what it costs.

Some of those who are opposing the Ford offer have criticized the 4 per cent on what it costs to complete the dams as annual rental for the water power. To show that there is no cause for such criticism I submit the following table of Government loans now outstanding in the shape of bond issues:

	Per cent.
Consols, 1930, $500,724,050	2
Panamas, 1916–1936, $48,954,180	2
Panamas, 1918–1938, $25,947,400	2
Panamas, 1961, $50,000,000	3
Postal savings, $11,774,020	2½
Conversion, 1946–1947, $28,894,500	3
War issues:	
Liberty, 1932–1947, $1,410,074,050	3½
Liberty, 1932–1947, $15,130,900	4
Liberty, 1927–1947, $66,362,800	4
Victory, 1923, $497,915,100	3¾

From the above table it will be seen that bond issues prior to the recent war issues were on a basis of from 2 to 3 per cent, and the average was under 2½ per cent. It also shows that a number of war issues were at 4 per cent and less. It was only toward the end of the war and in the most serious stress of the war that some bonds were issued at a rate of 4¼ to 4¾ per cent.

In normal times our Government bonds have been issued for much less than 4 per cent, so it is fair to assume that the 4 per cent which Mr. Ford is to pay as annual rental for a 100-year period will be above the average rate that will prevail during that time.

When the Ford offer is accepted Congress, instead of appropriating money from time to time to complete the dams, could provide for the issuance of 4 per cent bonds, which would be easily negotiated. The interest paid by the Ford Co. as rental for the power would pay the interest on the bonds and the amortization plan would liquidate the bonds, and in this way the completion of the dams would not cost the Government anything.

There has been some criticism of that part of the Ford offer which provides for a lease of the water power for 100 years. Practically all of the water-power developments up to this time provide for a 99-year lease period. The criticism of this feature of the offer seems to be due to a provision in the general water-power law approved June 10, 1920, which provides for 50-year leases with rights of renewal.

There should be no objection to the Ford offer on account of the 100-year lease period; first, for the reason that the dams at Muscle Shoals were approved by the War Department and work commenced on the construction of one of them before the enactment of the general water-power law; second, because the development at Muscle Shoals is in a class to itself. There is nothing else like it. Besides the dams are being built by the Government and will be the property of the Government, and not a lessee.

There is a fall of 134 feet in 36½ miles. The flow of the river is 72,000 second-feet at low water and 499,000 second feet at high water. The Wilson Dam is to be 100 feet high and 4,425 feet long; Dam No. 3, 14 miles up the river, is to be 40 feet high and 6,725 feet in length; the two together developing about 800,000 horsepower—more than has ever been developed at any one place in the world.

There is a present market for only a small part of this power. It will required a number of years to secure a market for it all. Mr. Ford is not willing to take over this water power under a lease for less than 100 years. He claims than on accounts of the heavy expenses and the time required to provide a use and market for this power that a lease for less than that length of time would be unreasonable.

General Beach, Chief of Engineers of the War Department, told you that he thought 100-year lease in this case was proper and reasonable and gave his reasons. Many others are of the same opinion. The Government and taxpayers are fully protected during the entire period of the lease, so there is no valid objection to the 100-year lease.

The chairman of this committee, after hearing this feature of the lease discussed by a number of witnesses, announced in an open meeting of the committee that he saw no objection to the 100-year lease period in the Ford offer. The fact that the general water-power law provides for a 50-year lease, with rights of renewal, is no reason why this lease should not be for 100 years, for the reasons I have stated.

The general water-power law, as we all know, was a compromise measure in many respects and has been very disappointing in results, as there has been but little water-power development since that time. There were great differences of opinion among the Members of both Houses of Congress as to what the lease period should be. A great many favored a 100-year lease period.

Someone has suggested that section 17 of the Ford offer might have the effect of giving the Ford Co., its successors or assigns, a perpetual right to at least a part of the power from these dams. To show that such is not the case I refer you to that section, which is as follows:

"17. In order that said company may be supplied with electric power and the farmers with fertilizers after the termination of the said 100-year leases, should the United States elect not to operate said power plants but determine to lease or dispose of same, the company shall have the preferred right to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon. If the said leases are not renewed or the property covered thereby is not sold to said company, its successors or assigns, any operation or disposal thereof shall not deprive the company, its successors or assigns, of the right to be supplied with electric power at reasonable rates and in amount equal to its needs, but not in excess of the average amount used by it annually during the previous 10 years."

Secretary of War Weeks made no objection to this section and does not construe it as has been suggested. Secretary Weeks has this to say about that section (House Doc. No. 167, p. 8):

"This paragraph does not bind the United States to a renewal of the lease and is in no way an attempt to control the policy of Congress beyond the 100-year period of the present lease, except to preserve to Mr. Ford's company 'the preferred right to negotiate with the United States for such lease or purchase and upon such terms as may then be agreed upon.' It also attempts to preserve for the company a right to be supplied with electric power for a period not stated, 'at reasonable rates' in the event the power plants are operated or disposed of to some one other than the company."

If the plants of the Ford Co., or its successors or its assigns, depending upon this power, should be denied the necessary power for operation at the end of the lease it would amount to a confiscation of their plants. The provision is reasonable and proper.

The building of these dams as provided in the Ford offer will not only develop this great water power which has been going to waste for all time, but will open up cheap water transportation on the upper Tennessee River, which runs through a vast area rich in great deposits of coal, iron ore, marble, slate, phosphate rock, zinc, and immense forests of hardwood timber, all of which is needed in other parts of the country. With this cheap water transportation all these materials which are now locked up for want of transportation facilities can be transported in the Ohio River, thence into the Mississippi River, and to all the markets, both domestic and foreign.

The Air Nitrates Corporation, a subsidiary of the American Cyanamide Co., with a capital stock of $1,000, constructed nitrate plant No. 2 at a cost of nearly $70,000,000 on a cost-plus percentage contract and collected a fee of $1,500,000 in addition. This company claims that it has a right to purchase nitrate plant No. 2 under its contract with the Government. There was no authority for the execution of a contract by the Secretary of War, or any other official, at the time of the execution of the contract, December 1, 1917, obligating the Government to sell this plant to the Air Nitrates Corporation and that part of the contract is null and void. No one has furnished the committee with any authority to support such a contention. A representative of this company did appear before this committee and claim that his company had a moral, if not a legal, right to purchase plant No. 2. The nature of the contract and

amount which has been paid by the Government to this company clearly shows that there is not even a moral obligation on the part of the Government. This representative also stated that his company did not care to buy the plant and in addition was not financially able to purchase it. So this so-called "option to purchase" in no way interferes with the acceptance of the Ford offer.

The Judge Advocate General of the War Department, after a careful consideration of this question, rendered an opinion declaring this option void, and that in his opinion there was not even a moral obligation on the part of the Government to sell the plant to the Air Nitrates Corporation.

The Alabama Power Co. also claims an option to purchase the Gorgas plant and transmission line from Gorgas, Ala., to Muscle Shoals. The Judge Advocate General has also decided that this is void. Attorneys for the Alabama Power Co. and my colleague, Mr. Oliver, have discussed at length every feature of the contract and transactions between the Government and the Alabama Power Co. in connection with the Gorgas plant and transmission line from Gorgas to Muscle Shoals, and I deem it unnecessary to undertake to add anything to what has been said. I take for granted that you will act upon the opinion of the Judge Advocate General.

I hope that I have shown that the acceptance of the Ford offer will not cost the Government anything in the end. But, even if it should lose some interest during the construction period, in making provision for the manufacture of a cheaper and high-grade concentrated fertilizer for the farmers in those sections of the country where fertilizer is absolutely necessary, it would not compare with the amounts which have been appropriated by Congress for the reclamation of arid lands in our Western States.

The Government reclamation of the arid West is both a paternal and an internal improvement which is essentially a cooperative arrangement between the Government and private parties. The summary of appropriations made by Congress for western land irrigation to 1915 amounts to $116,824,894.82, and of that amount there was an authorized Government bond issue of $20,000,000, and none of these appropriations in aid of irrigation improvements in the West returns any interest payment to the Government.

One of the most prominent examples of the reclamation projects of the West is the case of the Roosevelt Dam, 79 miles northwest of Phoenix, Ariz., this dam being 284 feet high and 235 feet long, originally estimated to cost $5,000,000, but the total cost of this reservoir, dam, power system, diversion works, canals, drilling, etc., to July 1, 1913, was $11,193,687. The money was loaned to them to aid in irrigating their lands without interest for at least 20 years, and in some places it goes on into a revolving fund year after year without any interest to the Government.

The Government has very properly assisted and encouraged the western farmers to water their arid lands. For the same reason the Government should at least give Mr. Ford an opportunity to aid the farmers who need fertilizer.

Other countries are using their air-nitrogen plants successfully for the manufacture of fertilizer and are making most valuable contributions to agriculture in this way. Our country is making progress along all other lines; why not this?

What is the cause of this opposition? It has been conclusively shown during this hearing that the Ford Co. would produce fertilizer by reason of the cheap water power and the Ford Co.'s business methods at from one-third to one-half cheaper than the present prices of fertilizer.

I believe that everyone who has studied the question will agree that Dr. Milton Whitney, Chief of the Bureau of Soils, and an expert on matters pertaining to fertilizer, was right when he said that the present policy pertaining to the manufacture and distribution of fertilizer was wrong and should be remedied.

I have no doubt but that this committee has concluded by this time that the manufacture of fertilizer by the Ford Co. at Muscle Shoals would revolutionize the fertilizer business in this country by reason of the quality and price of the fertilizer produced.

When the war ended it was costing the Government $1,000,000 an hour. One reason was that those who sold us nitrates and explosives of different kinds charged any price they pleased, while our boys were fighting and dying in the trenches in France. We were helpless; had to get our nitrates from Chile.

We are dependent upon Chilean nitrate for nitrogen for war and fertilizer purposes. We have paid out for Chilean nitrate since 1867 the enormous

sum of $821,183,624.12. In addition to this large sum the people of the United States, principally the farmers, have paid to Chile an export duty of $11.87 per ton on Chilean nitrates, which has amounted to $163,647,780.63 since 1867.

Why should the farmers of the United States continue to pay tribute to a foreign country to secure nitrogen for fertilizer purposes when there is over 21,000,000 tons of nitrogen in the air over every square mile, when we have one of the largest and best nitrogen plants in the world, equipped and planned to take the nitrogen from the air and convert it into a solid substance by means of the patented process for the fixation of atmospheric nitrogen, and thereby lower the prices and keep our money at home. We not only pay a high price for the Chilean nitrate and an export tax, but high ocean freight rates for four or five thousand miles to the nearest American port, and then high railroad freight rates to the station nearest to the farmer, then usually a long-distance haul over muddy roads to the farm where it is to be used. After all of this expense it contains only about 16 per cent of nitrogen; the balance is of no value as a plant food and is what is usually callled filler. Mr. Ford proposes to make a concentrated fertilizer and sell it to the farmer and let him do the mixing if he desires, and save all this expense.

The American representative of the Chilean Nitrate Corporation testified before the Graham Committee on War Expenditures that the price of Chilean nitrate or nitrate of soda, as it is commonly called, was fixed by the Chilean Nitrate Commission in London. He also stated that the by-product coke-oven companies in the United States placed the same price on their ammonium sulphate in proportion to nitrogen contents. He further stated that in his opinion if the Muscle Shoals plant should be operated for the manufacture of fertilizer that the Chilean Nitrate Corporation would have to sell Chilean nitrate at the same price that it would be sold for at Muscle Shoals. So it is easy to understand why the Chilean Nitrate Corporation should oppose the Ford offer. It has no competition at this time and is interested in keeping down competition.

The acceptance of the Ford offer will make us independent of this foreign power both for fertilizer and war purposes. The quality of fertilizer we are now using is inferior and the prices prohibitive in proporton to the present prices of farm products. We have been diligent in our effort to enact legislation in the interest of the farmers. We have secured large amounts of national aid to rural roads; we have provided a system of farm-loan banks for the purpose of enabling the farmers to secure long-time loans at a low rate of interest; we have revived the activities of the War Finance Corporation in order to assist the farmers in marketing their crops; we have recently enacted a cooperative marketing bill. We now have an opportunity to do something further by accepting the Ford offer and protecting the American farmer from further imposition by these foreign and domestic monopolies who fix and manipulate the prices of fertilizer at their will without any regard to the price of farm products or the financial ability of the American farmer.

The American Cyanamid Co. and the Virginia Chemical Co., the biggest of the fertilizer companies, the Alabama Power Co., J. B. Duke, of the American Tobacco Co., and the owner of the Southern Power Co. with its vast operations in the Carolinas, are all opposed to the Ford offer and favor the offer of the Alabama Power Co. They are all intertwined through stock ownership, as has been shown by congressional investigations. If the Alabama Power Co. should secure Muscle Shoals there would be formed a combination of interests of water power and fertilizer with power for evil without limit.

There is always great danger to the public in any one group of interests securing control over any industry. It is but natural that these interests should object to Henry Ford's getting Muscle Shoals. They, like the Chilean Nitrate Corporataion, do not want any competition, either in the fertilizer or water-power business. They believe in monopoly. They profit by monopoly. It is our duty to try to protect the people in their rights.

There are six and one-half million farmers in the United States. Thirty-eight per cent of our population live on farms. The annual value of crops and live stock amount to from eleven to twenty-five billion dollars. Agriculture has an investment of $80,000,000,000, the largest investment by far of any other business. The next largest business is railroads, with an investment of $20,000,000,000.

The shrinkage in value of the crops of 1920 amounted to $8,000,000,000, from which the farmers have not yet recovered. In the face of this condition of the American farmer, the price of Chilean nitrate has advanced $17 per ton within the last 30 days, with further increases threatened. The fertilizer known as 8-3-3 has advanced from $26 a ton to $31 a ton, and the indications are that it will go to $36 in a short time.

The National Fertilizer Association opposes the Ford offer. It has flooded Members of Congress with literature in which it is contended: First, that the Ford Co. can not make fertilizer at Muscle Shoals; and, second, that it can not make it cheaper than it is now being sold. The president of this association appeared before this committee and made the same claim. If this be true, why should they be so concerned about the Ford offer? It is very apparent that they believe that Ford can make fertilizer cheaper and that it will materially affect their business. This same representative of the National Fertilizer Association contended before this committee that a monopoly of water-power interests was in the interest of the people.

The Secretary of War, in his report to Congress on the Ford offer, made this very significant and pertinent statement:

"In this time, when there is a large amount of unemployment, it is not without importance to consider the advantages to the Nation of the employment of the large amount of labor required in undertaking this development. I therefore urge that Congress give early consideration to this matter, not only to settle a contraverted question but to furnish employment on a large scale."

Mr. Ford intends, if his offer is accepted, to begin work immediately and give employment to thousands of people who are now unable to secure employment. Mr. Ford's personal representative, Mr. W. B. Mayo, said to you one day last week that Mr. Ford wanted to get in on the work at Muscle Shoals this summer while the weather is good and the river is low and before there is further damage to the unfinished dam and machinery and equipment at the dam. He claims that the development of his company will eventually result in giving employment to 1,000,000 people. This, with an average of 5 to the family, would mean 5,000,000 people employed and supported as a direct result of this development.

Can anyone doubt for a moment that Mr. Ford, with his immense capital, organization, and wonderful record of efficiency, will not make a success of this undertaking? Would not the American people regard it as a national crime to reject the Ford offer and prevent this development, which would be nation-wide in its beneficial effects?

Mr. GREENE. Mr. Almon, do you want to leave in the record your deliberate suggestion that the rejection of the Ford offer would be regarded as a national crime?

Mr. ALMON. Well, if it is thought that expression is too strong I will say, "Would not the American people regard it as a national calamity?"

The acceptance of the Ford offer would not only result in giving employment to labor on a large scale, provide for better and cheaper fertilizer, and improvement to navigation, but that part of the country within a radius of 200 miles and probably more, and all intervening points would be supplied with cheap power for all purposes.

It also means the investment by the Ford Co. of forty or fifty millions of dollars in equipping the nitrate plant for the manufacture of fertilizer and the establishment of other industrial plants.

It is claimed by some that Mr. Ford can not make a success of the fertilizer business at Muscle Shoals; Mr. Thomas A. Edison, after visiting Muscle Shoals and making full investigation, said he considered that it was a practical thing to make fertilizer at Muscle Shoals; that there is nothing complex about it. Is not his opinion worth something?

Many said that Mr. Ford could not make cheap automobiles, trucks, and tractors in competition with those engaged in the business when he commenced, but in this they were mistaken. Last year the Ford Co. turned out 1,013,958 passenger automobiles and trucks, and is now selling an automobile, a tractor, and a truck for $1,150, and claims that he will be able to reduce to $1,000 if his offer for Muscle Shoals is accepted.

The success of Henry Ford is the marvel of the century when we realize what he has accomplished was in spite of the powerful opposition, fighting a single-handed battle. The great masses of the people of the Nation not only indorse his offer but have implicit faith in his ability to carry out the big plans he has in view if he gets Muscle Shoals.

One of the chief causes of his success is because he is willing to help his fellow man. No one ever hears of friction between capital and labor in the great manufacturing plants of the Ford Motor Co.

Henry Ford believes in high wages and low price of product. On that basis he has been a wonderful success. In this respect he is very different to many of the leaders of financial power in this country.

The Ford offer has the hearty and unanimous indorsement of every farm organization and farm newspaper in this country, and their representatives have appeared before this committee and earnestly urged its acceptance. They are equally as unanimous and united in their opposition to the offer of the Alabama Power Co. This is but natural, as it makes no provision for the manufacture of fertilizer at Muscle Shoals. The representatives of these farm organizations have visited Muscle Shoals several times and made a thorough investigation of its possibilities from a fertilizer standpoint and have been unanimous in their report and recommendations in favor of the completion of the development and the operation of the plants. They regard the acceptance of the Ford offer as the only hope of relief from the Chilean nitrate and fertilizer monopolies and trusts. The farmers of this country are watching closely the action of Congress in the matter of the Ford offer and will not be satisfied unless this is done. They are intelligent and fully understand the Ford offer and are confident that if it is accepted that the Ford Co. will revolutionize the fertilizer industry, destroy the monopoly, and give them cheaper and better fertilizer.

The Ford offer has the unqualified indorsement of the Mississippi Valley Association, an organization composed of strong and successful business men, representing 55 per cent of the population of the United States.

The Ford offer was unanimously indorsed by the great farmers' conference which was called by the Secretary of Agriculture, Wallace, at the request of President Harding, which was in session in the city of Washington for five days the latter part of January of this year. During the discussion of the Ford offer in that conference only one voice was raised against it, and that was by an official of the American Fertilizer Association.

President Harding in addressing the Washington conference of farmers, among other things, made the following significant statement:

"Waterways have been too long neglected in America. We need a practical development of water resources, both for transportation and power. A large share of the railroad tonnage is coal for railway fuel. The experiences of railway electrification demonstrates the possibility of reducing this cost and increasing efficiency. We may begin very soon to consider plans to electrify our railroads."

Soon after this address was delivered by President Harding Mr. Mapothier, president of the Louisville & Nashville Railroad, one of the great railway systems of the country, announced in a speech in Birmingham, Ala., that he was in favor of the Ford offer for Muscle Shoals and if it was accepted by Congress his company would like to make a trial of electricity in railroad operation on its branch line from Muscle Shoals to Nashville, Tenn., a distance of about 150 miles.

The 800,000 horsepower developed at Muscle Shoals would conserve 6,500,000 tons of coal annually. That is, the water power would be equal to the power generated by the use of that much coal.

So when the water power is developed in accordance with the Ford offer it will also mean a conservation of coal on a big scale.

The Alabama delegation in Congress is as a unit in favor of the Ford offer and will continue to work together very earnestly to have it accepted by Congress. The delegation is equally as strong and united in its opposition to the offer of the Alabama Power Co. and its efforts to defeat the Ford offer.

The delegations from a number of other States have also indorsed the Ford offer. Business, civic, and commercial organizations in all parts of the country have passed resolutions urging Congress to accept the Ford offer. I don't recall anything that has ever heretofore attracted such a nation-wide interest and favorable indorsement. Not only farmers, but merchants, bankers, and professional men have made known to Members of Congress their approval of the Ford offer and their desire that it be accepted. It would seem that 99 per cent of the people in many parts of the country favor the Ford offer. I feel sure this is true in the State of Alabama, which I in part have the honor to represent in the House. I am also sure that the opposition in that State is just as strong against the offer of the Alabama Power Co. and its eleventh-hour effort to defeat the Ford offer and perpetuate its monopoly of the water power of Alabama.

This sentiment for the Ford offer and against that of the Alabama Power Co. has been demonstrated by the people of Alabama and other parts of the country by means of petitions, resolutions, of mass meetings, women clubs, league of women voters, posts of American Legion, labor organizations, and civic organizations of all kinds urging Congress to adopt the Ford offer and reject that of the Alabama Power Co. These expressions of the people have been filed with this committee with the request that they be carefully considered. There have been mailed to me petitions signed by practically every State, county, and municipal officer in Alabama, the immediate and direct representatives of the people, urging the acceptance of the Ford offer and strongly protesting against that of the Alabama Power Co. I will not ask to encumber the printed hearings with all of these petitions, but I do ask that one be inserted in the record—that of Jefferson County, in which the city of Birmingham is situated, the headquarters of the Alabama Power Co. You will notice that it is even signed by all the judges of the court in the city of Birmingham. I will only ask permission that a few of the resolutions referred to be inserted in the record.

As a further expression of the people of the Birmingham district I ask permission to insert in the record a copy of the resolution passed by a mass meeting held in the city of Birmingham on the 19th of last month, attended by 2,000 persons—1,000 more were turned away for lack of room—indorsing the Ford offer and expressing their unalterable opposition to the offer of the Alabama Power Co.

The sentiment of all the people of Alabama was well and very forcefully expressed in a memorial addressed to the President and Congress and committees in Congress adopted by a state-wide mass meeting, 5,000 strong, at Montgomery, Ala., on Wednesday, March 1, 1922, which it is agreed shall be inserted in the record.

Mr. Chairman and gentlemen, I will now give very briefly my views and somewhat of an analysis of the Alabama Power Co.'s offer, and then I will have concluded.

The acceptance by Congress of the bid of the Alabama Power Co. would mean practically a donation by the Government of the large steam power plant at Muscle Shoals—nitrate plant No. 2, which cost $12,326,392; the Gorgas plant and transmission lines, which cost $4,676,000; and the $17,000,000 which has been expended on the construction of the Wilson Dam, making a total of $34,002,392.

The offer is deceptive in that it begins by offering $5,000,000 for the two steam plants and transmission lines, but later provides that the cost of the lock at the Wilson Dam is to be deducted from this amount. One or more of the engineers claim that the lock would cost approximately $4,500,000. Under the offer of the Alabama Power Co. it would build the lock and would have its own methods of bookkeeping, and it could easily make it cost the full amount of $5,000,000.

The $1,000,000 secondary horsepower offered for the operation of nitrate plant No. 2 would not be used by the Government, and the Government would not be able to lease it to anyone who would, for the reason that it would require from $10,000,000 to $15,000,000 working capital and expenditure to convert it into a fertilizer plant. Besides, no one could depend upon this secondary power available for 8 or 10 months in the year with which to operate the plant. The steam plants having been conveyed to the Alabama Power Co., neither the Government nor anyone it might designate to operate the plant would have any available power from two to four months when the necessary secondary power was not available. This secondary power would be of value if there were auxiliary steam plants or primary water power available. It would be of value if both of the dams were built and if storage dams were built in the upper Tennessee River and its tributaries, as Mr. Ford proposes to do at his own expense, so as to store the flood waters and let them down during the low stages of the river, and thereby convert secondary into primary power at the Muscle Shoals Dams.

It is provided in section 2 of the offer of the Alabama Power Co. that if this secondary power is discontinued by the Government, due to change in the art in the production of fertilizer and munitions, at nitrate plant No. 2, and, for no other reason as the offer is written, that the Alabama Power Co. is to purchase and pay for the same in accordance with a schedule to be set forth in the license. It will be noted that this is to be done in the event the Government

discontinues its power for the reasons stated above, which might never occur, for the reason that the Government might, and in all probability would, never begin to use it. It will also be noted that the amount to be paid the Government for it in such an event is to be fixed in accordance with the schedule set forth in the license. This license would be issued by the Federal Power Commission, and the schedule of rates fixed thereby would be a matter of agreement between the commission and the Alabama Power Co., so the Government would be at the mercy of the Alabama Power Co., and it would result in the Government receiving practically nothing for this secondary power. For these reasons I feel that I was justified in saying at the outset that the acceptance of the offer of the Alabama Power Co. means practically a donation by the Government to that company of the two steam plants, transmission lines, and the Wilson Dam, upon which $17,000,000 has been expended, altogether representing a total investment of $34,002,392 by the Government.

If the offer of Henry Ford was not in existence I do not believe the committee or Congress would consider for a moment the acceptance of the offer of the Alabama Power Co. In the absence of the Ford offer the committee would evidently recommend the completion of the Wilson Dam by the Government rather than make this donation to the Alabama Power Co.

The Secretary of War has recommended that the Dam No. 2, known as the Wilson Dam, be completed by the Government in the event the Ford offer is not accepted. He stated that the revenue from the sale of the water power from the Wilson Dam would amply justify Congress in appropriating a sufficient amount with which to complete it. The committee and Congress would certainly conclude that it would be better to spend twenty or twenty-two million dollars more to complete this dam and own it for all time rather than make the donation of $34,000,000 worth of property to the Alabama Power Co. in order to induce it to spend enough money to complete it and then own it, and if the Government acquired it at the end of 50 years would have to pay for it a fair value in accordance with the water power law. If finished in accordance with the Ford offer, it would be the property of the Government for all time. If the offer of the Alabama Power Co. was accepted there is no way by which anyone could know when, if ever, the work upon this dam would begin. When the permit was issued by the Federal Power Commission, the Alabama Power Co. would have two years under the water power law to begin construction work and might have it extended an additional two years. So the statement in the offer that work would commence within a reasonable time does not mean anything. In fact, there is no certainty whether a permit would ever be issued to the Alabama Power Co. by the Federal Power Commission if its offer should be accepted by Congress. If a permit was issued the company might never be able to borrow the money with which to complete the Wilson Dam. In fact, it might never make any effort to raise the money, but its real purpose in making its offer would have been accomplished—that is, it would have been the means of defeating the Ford offer. Your time and that of Congress would all have been in vain, and the Alabama Power Co. would continue to enjoy a monopoly of the water powers of Alabama, which its president claims and insists would be in the interest of the people. I deny this; the people deny it, as is shown by resolutions, petitions, mass meetings opposing the offer of the Alabama Power Co. and its methods.

The development at Muscle Shoals is a most important part of our national defense. There is located our great munitions plant. Would it not be a great piece of military strategy to turn it over to a lot of foreigners, or place it or its principal parts under their control? A majority of the stock of the Alabama Power Co. that can be voted is owned by foreigners. They own a large part of its securities. If the Alabama Power Co. completes the Wilson Dam, it would have to borrow the money with which to do it. It is natural to presume that it would do as heretofore and borrow it from foreigners.

The Alabama Power Co. published and furnished the Alabama Legislature in 1918–19 a statement as to its business and how it secured its capital, in which appears the following statement:

"The capital to construct the work was obtained in England, Germany, France, Belgium, Canada, and a part in the United States."

The Alabama Power Co. is owned by the Alabama Traction, Light & Power Co. (Ltd.), which is a corporation of the Dominion of Canada, and that it is very largely the property of citizens of Great Britain.

It is bad enough for this corporation under foreign influence to have a monopoly of practically all of the water-power sites in Alabama, much less to

get its clutches on all of the water and steam power connected with the Government munitions plant at Muscle Shoals and strip the plant of all of its ability to function in the event of a military emergency.

If the Ford offer is accepted it will be controlled by Americans and American money, and under no obligations to any great financial interests, trusts, or monopolies, domestic or foreign.

The offer of the Alabama Power Co. can not be regarded in competition with the Ford offer. It is entirely in a different class. It makes no provision for the building of Dam No. 3, no improvement, navigation improvement, nor the operation of the nitrate plant for the manufacture of fertilizer. All of which is provided for in the Ford offer. I do not believe that the committee will consider for a moment favorable action on the offer of the Alabama Power Co.

It would seem that there is but one of four courses for this committee to follow, viz:

1. That of scrapping the development which has cost over $100,000,00, as has been suggested by the big interests opposing the Ford offer. Or
2. For the Government to complete the water-power development and go into the business of selling power and manufacturing and selling fertilizer. Or
3. Accept the offer of the Alabama Power Co. and donate to it the steam power plants and unfinished dam, representing an investment of $34,000,000 by the Government, and make no improvement to navigation and no provision for the manufacture of fertilizer. Or
4. Accept the Ford offer and convert a large war-time expenditure into an investment which will result in a great benefit to the entire country.

It would be almost unthinkable to consider the first; the second would be very objectionable to the great majority of people; the third would mean the defeat of all of the purposes and objects of the Government in what has been done at Muscle Shoals; the fourth is the only safe and sensible course to pursue and would meet with the approval of the country at large.

In conclusion I most earnestly ask that when you have completed your hearings and visited Muscle Shoals that you will come to the conclusion that the offer of Henry Ford should be accepted, and that you will not only recommend its acceptance in your report, but that you will also prepare and introduce in the House such a bill as may be necessary to provide for its acceptance by Congress.

I thank you, Mr. Chairman and gentlemen, for your attention and your courtesy in permitting me to be heard.

(The resolutions referred to by Mr. Almon follow.)

RESOLUTIONS INTRODUCED BY HON. C. W. ASHCRAFT AND UNANIMOUSLY ADOPTED BY THE FLORENCE CHAMBER OF COMMERCE, FLORENCE ROTARY CLUB, AND FLORENCE EXCHANGE CLUB, IN JOINT MEETING ASSEMBLED, MONDAY, FEBRUARY 20, 1922:

Cittizens of Florence in mass meeting assembled, take note of the following facts:

1. That the Alabama Power Co., doing business in this State, is owned principally by a foreign corporation with its official domicile in Canada (see official report of Graham investigating committee); that the majority of its stock is owned in Canada and England, and the policy of the company is therefore necessarily alien.
2. The only streams of Alabama offering opportunity for power developments of considerable proportions are the Coosa, Tallapoosa, and Little Rivers, and the Tennessee River at Muscle Shoals.
3. That the Alabama Power Co. has bought up and preempted the entire water-power sites and rights in perpetuity on the first three of these rivers, namely, the Coosa, Tallapoosa, and Little Rivers, and has entered upon a program of development by themselves, and the prevention of all development by others, generally estimated to cover a period of 100 years. Although they have now been operating in Alabama almost 20 years, they have completed only one unit in this program and activities already displayed give no promise of completing, within the 100 years, the developments already preempted by them. It is therefore evident that their purpose in bidding for Muscle Shoals can not be based upon a desire either for opportunity for expansion or to faithfully serve the public, but their purpose must be found in their desire to entrench themselves and fasten upon the people of Alabama and surrounding States for all time the blight of their complete and oppressive monopoly. By inference

they plead loudly against a 100-year lease to Henry Ford, but they propose to yield nothing of the stranglehold which they have acquired in perpetuity on every important power site in Alabama except Muscle Shoals.

4. In their activities instead of developing navigation conjointly with power, their development prevents navigation in any continuous form. Their entire interests is to retard development of power and navigation, as in so doing they can maintain highest possible rates for power and delay responsibility for navigation. Their record is that they have procured municipal franchises for light and power wherever possible and retail current at exhorbitant retail rates. They have not fostered or developed industry at any point they serve and their reputation in the State is in line with the findings of the Graham congressional investigating committee in reference to their unpatriotic dealings with the Government during and following the war.

5. For the foregoing reasons we conclude that should Congress accept any proposal from Alabama Power Co. that would give them control over Muscle Shoals it could only result in delaying developments in all other streams in Alabama over which they have already obtained control in perpetuity, or delaying development of Muscle Shoals.

6. Alabama Power Co. has no experience in, nor plans for, any activity outside of development and transmission of power, and therefore could not be expected to finance or develop power faster than development of industry by others would create demand for power.

7. Being a corporation owned by aliens, the citizens of the United States could not intrust their security and preparedness as a Nation to the mercies of its policy makers, who are men whose allegiance is sworn to other countries.

8. On the other hand, Mr. Henry Ford has formulated a mammoth plan of industrial development that grips the imagination and thrills the enthusiasm of every American citizen, and seeks power for its operation. He is to the manor born, he has proven himself capable, he is regarded as fair in all his dealings. American citizens wherever located have confidence that he can and will succeed in the construction and operation of a great industrial section in such manner as to not only give employment to thousands now unemployed, but also to awaken new and inspiring ideals in industrial life. He came promptly upon invitation of his Government, and not at the last hour, and made a reasonable proposal to immediately develop all the power at Muscle Shoals, not part of it, and to immediately employ the whole power developed in needed industry, and to immediately make navigable the river for the benefit of up-river cities, as Decatur, Guntersville, Chattanooga, and Knoxville. He also proposes to ever hold the plants, processes, and personnel subject to the immediate call of the Government in case of war, and to operate to full capacity for the benefit of the farmers in times of peace.

9. While legislation and court rulings in every quarter have conceded to railroads, banks; in fact, all forms of business, and to organized labor the right to a reasonable profit or to a reasonable wage, only Mr. Ford in his proposal for Muscle Shoals has offered one ameliorating item to the sad condition of the American farmer, to whom we must all look for both food and raiment.

10. The foregoing facts considered, we as citizens of Alabama and of the United States do solemnly resolve:

First. That the Alabama Power Co., whose owners are citizens of foreign countries, propose to buy the power plant at nitrate plant No. 2, and this nitrate plant is the only such plant within our borders, and therefore constitutes the sole item of preparedness against war so far as nitrates are concerned, and no matter what price the Alabama Power Co. might offer for this steam power plant to separate it from the nitrate plant, the citizens of these United States would be worse than foolish to regard the offer otherwise than as coming from "Greeks bearing gifts."

Second. In view of their large holdings of other power sites in Alabama, which they neither develop nor allow to develop, we denounce the bid of the Alabama Power Co. for Muscle Shoals as both unpatriotic and contrary to the best public interest.

Third. Henry Ford, a citizen of the United States in whom his fellow citizens believe without reservation, has in response to the call of his Government, made to Congress a proposal, which, if accepted, will immediately procure the full development of all the water power at Muscle Shoals, the complete navigation

of the river and the building, within our day and generation, of an industrial empire that taxes the imagination to comprehend.

Fourth. Therefore, all these things carefully considered, we urgently appeal to Congress to promptly accept the Ford proposal and with the least possible delay put it into active effect.

Fifth. That copies of these resolutions be given to the press, and sent to all Alabama Senators and Representatives in Congress.

Resolutions of Birmingham Mass Meeting.

Whereas the great question before the American people to-day and the Congress of the United States is the proper utilization, for the benefit of all the people, of the great natural resources that have remained dormant for 100 years or more at Muscle Shoals, Ala.; and

Whereas Henry Ford, the mechanical wizard of the age, has made a proposal to the Government that meets with almost unanimous approval of the people of the entire Nation, and apparently a large number of Representatives in Congress and the Senate: and

Whereas Henry Ford's offer for the operation of the Muscle Shoals properties was made in good faith to the proper person as spokesman for the Government, Secretary of War Weeks, and after due consideration by the Secretary of War was submitted to Congress for its approval or rejection, and was apparently about to be ratified; and

Whereas selfish interests, such as the Fertilizer Trust, power monopolies, and others, supported by the gigantic moneyed powers of Wall Street, are opposed to the Government disposing of these resources in a way that would be of benefit to the people as a whole: and

Whereas a sequel to this great opposition is shown by the submission of a bid by the Alabama Power Co., a foreign corporation, that has never been of any material benefit to anyone other than the stockholders, who are citizens principally of foreign countries: Therefore be it

Resolved, That we, the citizens of the Birmingham district, in mass meeting assembled this the 19th day of February, 1922, go on record as being unalterably opposed to the Government of the United States considering the bid of the Alabama Power Co. And be it further

Resolved, That we, the citizens of this district, heartily indorse and unqualifiedly recommend that the proposal of Henry Ford be accepted and entered into by the Government for the operation of the Muscle Shoals properties. And be it further

Resolved, That these resolutions be given the widest publicity by furnishing same to the press, and that a committee of five be appointed by the chairman of this meeting to forward copies of these resolutions to our two Senators and our Representatives in Congress and the committees of Congress before whom the proposals are now pending.

Petition of Officials of Jefferson County, Ala.

The State of Alabama.
Jefferson County.

The Hon. E. B. Almon,
Washington, D. C.:

We urge the Government to accept the offer of Henry Ford for Muscle Shoals because we believe that it will be developed by him for the benefit of the American people. We protest against the acceptance of the offer of the Alabama Power Co., because it would insure to it the control of every large water-power site in Alabama and thereby fasten upon our people for all times a water-power monopoly.

J. P. Stiles, judge of probate, Jefferson County, Ala.; M. V. Henry, county treasurer; William E. Fort, judge criminal division, circuit court, tenth circuit; H. P. Heflin, judge criminal division, circuit court, tenth circuit; Joseph N. Tate, solicitor tenth judicial circuit of Alabama; C. B. Smith, judge civil division, circuit court; J. O. Sims, judge civil division, circuit court; J. B. Aird, judge civil division, circuit court; Hugh A. Locke, judge civil division, circuit court; Wm. J. Waldrop, clerk of circuit court; Richard T. Evans, circuit judge; Romaine Boyd, circuit judge; D. C. Ball, president board of revenue; Lacey Edmundson, board of revenue; T. E. Huey, board of revenue; J. W. Givin, board of revenue; W. B. Copeland, board of revenue; James F. Hawkins, tax collector; J. C. Hartsfield, sheriff; L. R. Dillon, tax assessor, Jefferson County; M. E. Morris, chairman board of registrars; Conrad H. Ohme, engineer, Jefferson County.

STATEMENT OF HON. WILLIAM B. BANKHEAD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA.

Mr. BANKHEAD. Mr. Chairman and gentlemen of the committee, I shall at least earn the gratitude of the committee by being very brief in the concluding statement I shall have to make, because it is about time for the noon recess.

The entire Alabama delegation, Mr. Chairman and gentlemen of the committee, are grateful for the opportunity you have extended to us, through the courtesy of the chairman, to appear before you this morning and present to you a statement of the expression of the unanimous attitude not only of our entire delegation in the House, but I am authorized to say also the attitude of our representatives in the Senate, as being all for the recommendation by this committee that the offer of Mr. Ford be accepted in its amended form and reported to the House for favorable action.

I am not going at this late hour to make any argument on this proposition. This committee has been extremely patient in the hearing of this whole case. In my entire service in Congress I do not recall a great public question involved in legislation to which more elaborate consideration has been given by any committee, and I think the committee is deserving of the thanks not only of other Members of Congress but of the country at large for the desire it has shown to understand every angle of this great national question, because it is a big question. It involves questions of large national policy possibly, as well as vast expenditures, in connection with the solution of the problem with which this committee has to deal.

Gentlemen, you have heard this case. The record will soon be made up, and it is going to be a question of action upon the part of this committee. I do not know what consideration the committee has given to other offers that have been submitted, but the controversy seems to be whether you shall act favorably upon the proposition of Mr. Ford or whether you shall recommend the adoption and acceptance of the offer of the Alabama Power Co. This committee knows what is involved in these two propositions. You know what Mr. Ford proposes to do, and you have before you the guaranties of his undertaking, and you know what the offer of the Alabama Power Co. is. You have had a full and complete explanation of that offer. The cards have been laid on the table in this proposition, and it is up to this committee and to the Congress subsequently to take action upon it.

The people of the State of Alabama, the great preponderant element of the people of my State, are unquestionably in favor of the adoption of the Ford offer.

And gentlemen, without undertaking to be critical of the Alabama Power Co.—and I do not want to be that—it is rather significant, and I think it should impress this committee, that where there is what is claimed to be a local corporation which is offering a competitive bid to a man who lives in a different section of the country—and the people of Alabama are fairly intelligent people; they rate up with the ordinary people of the country in intelligence and in patriotism and in an attempt to protect their own interests and the interests of their children—I say it is singularly significant, gentlemen of the committee, that the people who are most directly interested locally in this proposition, no doubt from the standpoint of their own conception of their own best interests, have with practical unanimity recommended to this committee and to the Congress of the United States, that the offer of the Alabama Power Co. be rejected and that the offer of Mr. Ford be accepted by the Congress of the United States.

Gentlemen of the committee, there must be some reason for that. I am not going to go into an analysis of the psychology of the situation or the arguments presented, because that would be tedious. This committee is perfectly able to form its own judgment on those questions.

I understand what has been set up as the most difficult question the committee has before it is that it may involve litigation; and it must be admitted, gentlemen of the committee, that it will inevitably involve litigation if the actions and assertions of the officials of the Alabama Power Co. are true, and they have given notice to this committtee and to the world that they propose to stand upon their rights, as they see them, as expressed in their contract with the Government of the United States.

It resolves itself into this, if you accept the Ford offer: The Government of the United States has to deliver title to the property at Gorgas and to the transmission lines to Mr. Ford; but if it is involved in litigation, as it probably will be, and will possibly cost the Government of the United States some additional money, is the object to be achieved worthy of that expenditure and of that hazard? I submit to you that it is.

I think a great question here is the question of the fertilizer. I do not speak of the farmers from the standpoint of propaganda. Some suggestion has been made here that probably that phase of this case has been stressed too much. But the great vital question involved in this proposition, as we people see it, is the one affecting the interests of the farmers of this country. They have been subjected to the exactions of oppressive prices for fertilizers, as they see it. From the evidence presented to this committee by Mr. Swann, it is fair to assume that if the plant at Muscle Shoals is developed and completed, the cost of fertilizer to the farmers of America will be very greatly reduced. If you reduce it one third, or even 20 per cent, figuring the aggregate of millions of dollars that the farmers all over America, not only in our section but in every section of the country, could be saved by the operation of this plant on that one matter alone, gentlemen, I say it involves the proposition of the national prosperity of our great basic industry, which would justify the Government of the United States in the expenditure of some money, if it had to spend it. You are familiar with the proposition by which it is proposed to amortize the amount of the additional expense.

There you have a great plant, constructed under the authority of Congress, and if you accept the Ford offer you have that great plant always in operation for military preparedness. Some of the members of the committee, judging from their expressions, regard that as the paramount question; others look at it more particularly from the aspect of the production of fertilizer for the farmer.

Then, there is the great question of opening the Tennessee River for navigation. The Ford offer, if accepted, will practically complete the navigation of the Tennessee River from Chattanooga to where the river flows into the Ohio. So, there is the proposition—it is merely a question of action. The members of the Alabama delegation, the members of the Tennessee delegation, the members of the Mississippi delegation, the members of the Georgia delegation, who are the men most immediately interested in the matter from the standpoint of locality, after a full and fair examination of all of the aspects and all of the possibilities arising out of these two offers, gentlemen of the committee, submit it as their deliberate judgment—and we are merely seeking to express what we believe to be for the best interests not only of the people of our States and the people of all the other States, but we are expressing the judgment of the membership of that great Mississippi Valley Association, composed almost exclusively of business men, representing 55 per cent of the total population of the United States, who come to you with a very carefully prepared pamphlet in which they state their reasons why the Ford offer should be accepted—after a very careful and painstaking examination. The are hard-fisted, hard-headed, business men, and they are looking out for what they conceive to be the best interests of the population which that association represents, and they give it as their opinion that the Ford offer should be recommended for acceptance by the Committee on Military Affairs.

Gentlemen, we appeal to you upon the facts in this case, not upon prejudice, not upon rhetoric, not upon any ad hominum considerations at all, but upon the pure standpoint of what is for the real, best interests of the American people as a whole, and we ask you, especially the Members of the Alabama dele-

gation, to report favorably upon the Ford offer, with such suggestions as to the legal difficulties as may be suggested to the committee when you come to frame this legislation.

Mr. Chairman and gentlemen of the committee, I am very grateful to you.

The CHAIRMAN. The committee feels very grateful to you, Mr. Bankhead, for your kind statement regarding the efforts on the part of the committee to get through with this work, after a thorough and deep investigation of all the problems involved. We appreciate it.

Mr. Byrns, of Tennessee, would like to have a few minutes to speak for the Tennessee delegation. We will be very glad to hear Mr. Byrns at this time.

STATEMENT OF HON. JOSEPH W. BYRNS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE.

Mr. BYRNS. Mr. Chairman and gentlemen of the committee, I am going to ask the committee's indulgence only for a word or two.

The Governor of Tennessee appeared before the committee several days ago and stated that the overwhelming and preponderant sentiment of the people of Tennessee is in favor of the acceptance of the proposal made by Mr. Ford. There are present here this morning every member of the Tennessee delegation. Of course, I do not presume to speak for them, but I feel sure that they will agree with me when I say that the governor very correctly expressed the sentiments of all the men, women, and children in Tennessee. And I feel sure that the members of the Tennessee delegation also indorse what has been said in advocacy of the acceptance of Mr. Ford's proposal by the gentlemen from Alabama, who have just concluded their remarks.

Mr. Chairman and gentlemen, the people of Tennessee believe that a company with a record of monopolistic control, such as has been attested by the very strong resolutions presented by Mr. Oliver, which are indorsed, as I understand it, by the entire delegation from Alabama, can not be depended upon, if given control of this great power at Muscle Shoals, to utilize it in the interest of the general public.

The people of Tennessee are convinced, and I very earnestly join in that conviction, that the only proposition before the committee, which, if accepted, guarantees that the great power at Muscle Shoals will be developed in the most complete manner, and that after its development the general public, as a result of such development, will receive benefits therefrom is the proposition which has been submitted by Mr. Ford.

As has been forcibly stated here, I think, by the gentleman from Alabama, Mr. Oliver, the idea of Congress in first making it possible to develop this plant at Muscle Shoals was to utilize it in case of war for the manufacture of nitrates, and in time of peace for the benefit of the great agricultural interests of this country. Mr. Ford's proposition, as we view it, means that that power will not only be developed to its fullest capacity, but it means that the nitrate plants, which are intended to be maintained by the Government, will be utilized in time of peace for the benefit of the general public, and the farmers in particular, and maintained to an up-to-date standard. It also means that the Tennessee River will be made navigable, and that will open up to the country all of that rich section in east Tennessee, which abounds in minerals and other products so useful to the country in general.

In conclusion, Mr. Chairman and gentlemen, I want to emphasize what has already been said, that this is something more than a local proposition. It is distinctly a national proposition. Of course, the people in that particular territory, those who are local to it, will benefit materially, and that section will benefit materially. But it is a national proposition, because, as was stated by one of the most distinguished hydraulic engineers in the United States in a hearing held by another committee last winter, the development of this power, the demonstration of just how cheaply power can be generated there will mean the general development of water power throughout this country.

Representing one of the districts in Tennessee, and on behalf of Tennessee, speaking, as I believe, the sentiments of an overwhelming majority of the people of that State, I hope that this committee will, in its wisdom, see fit to recommend the acceptance of the proposition made by Mr. Ford.

The CHAIRMAN. Gentlemen of the committee, this concludes the hearing this morning, and I would like to ask you if the members of the committee will be willing to stay for a few minutes for an executive session?

Mr. OLIVER. May I say to the chairman that a newspaper reporter came to me after I concluded my remarks and said that he thought, perhaps, I had done the reporters an injustice in saying there had been no accurate reports sent out I do not know who sent out the reports to which I have had reference. One of them appeared in the Washington Post of this morning, and I will be glad to supply a copy of that report, with some others that came to my attention, and submit them to the committee later. Some of them appeared in the Alabama papers. I do not recall any reports now that I had in mind appearing in the report of the Associated Press.

The CHAIRMAN. I saw that article which appeared in the Post this morning, and I asked those very questions that are referred to of Mr. Ford's representative.

Mr. OLIVER. Let me call your attention to this. I do not know whether you read this part of it. It says:

"After the hearings were adjourned yesterday other committee members said the legal barriers to acceptance of the Ford proposal appeared inescapable because of the contracts held by the Alabama Power Co. and the Air Nitrates Corporation, which, those concerns claim, give them exclusive rights to purchase the Warrior steam plant and nitrate plant No. 2, respectively."

That was the paragraph I had special reference to as having created a wrong impression; that was what I had in mind in making the statement. I have seen other statements of that kind in the press.

The CHAIRMAN. I do not know what the other members of the committee said, but I do say that I did say those things to Mr. Mayo, and called his attention to the proposition that we might have litigation over this matter; and I hoped that Mr. Ford would be able to agree with the members of the committee that if, in case of litigation, we would be able to depend upon him to try to help us out.

Mr. DAVIS of Tennessee. Mr. Chairman, will the committee hear me for just half a minute?

The CHAIRMAN. The members of the committee, of course, would be glad to hear any Member of Congress. I did not know that the gentleman wanted to appear before the committee, and made no arrangements for him. I would like to get into executive session and talk to the committee. We can probably arrange for you to apapear before the committee at the next meeting.

Mr. BANKHEAD. Mr. Chairman, Mr. McDuffie, of the Alabama delegation, would like to have permission to file a brief statement in the record.

Mr. MCDUFFIE. Mr. Chairman, I am not asking the committee to indulge me to-day, but I would like permission to file a brief statement in the record.

The CHAIRMAN. If there is no objection, you may hand your statement to the reporter and it will be printed in the record.

(The following statement was submitted by Mr. McDuffie:)

Mr. Chairman and gentlemen of the committee, it is my judgment that no question so far reaching in importance as the disposition of Muscle Shoals has presented itself to Congress or any committee of Congress since the end of the World War. Your problem involves not alone the return in dollars and cents to the Government upon its investment of a hundred millions of dollars, but the carrying out of a great national policy of preparedness or defense in the event of war and the encouragement and development of our basic national industry of agriculture in times of peace. The disposition or solution of your problem at Muscle Shoals is a question which I feel this great committee will not and should not approach from the standpoint of local interest or partisanship.

This committee has always claimed to be a nonpartisan committee in its work and the country has grown to know it as such. The great majority of the American people are therefore expecting you gentlemen to view this question and pass upon it in the light of its importance as a big national problem.

Muscle Shoals is the child, so to speak, of the Committee on Military Affairs. It was this committee that saw the value and possibilities of that second greatest water-power site on the American Continent and embarked upon its development. This development was never contemplated as a scheme to make money for the Government. A distinct policy was in view when the Congress decided upon the development at Muscle Shoals, just as we had certain policies in view when we built the Panama Canal and the Alaskan Railroad. The canal has never paid a return on the investment in actual dollars, and so far we have no reason to hope the Alaskan Railroad, which has cost some seventy-five millions,

will soon be a source of revenue for the Government, though each of these governmental projects has served a useful purpose and is the result of broad vision on the part of our statesmen.

Of course the Government reaps no return in money for maintaining an Army and Navy. In many instances the improvement by the Government of our rivers and the development of reclamation projects have never paid any appreciable amount on the money invested. I think it can be assumed therefore, that you gentlemen, while anxious always to secure the best possible return on money expended or to be expended by the Government at Muscle Shoals, can not and will not permit this to be your controlling thought in passing upon any offer which has been submitted to you. The main question appears to me to be the carrying out of the policy of Congress as expressed in the national defense act of 1916, namely, the construction or development of plants for making explosives and fertilizer. I submit that the offer of Henry Ford more nearly conforms to that policy of Congress already adopted than any other offer in this respect, and at the same time his offer, viewed from the standpoint of a return on the invested capital, is better than any other.

Measured by other investment of public money the Ford offer means a greater return on the capital invested than any other Government enterprise I can now recall. While you figure interest on the amount of capital invested in the plants for which he offers five million cash, you should figure also interest on the money invested in the Alaskan Railroad, the Panama Canal, and the reclamation projects. It might also be well to figure on the investment in our merchant ships, some of which were offered at twenty-one hundred, though they cost about $800,000.

Now, let us see what the situation is with reference to these offers for the Muscle Shoals property. You will recall that many months ago the question of completing Dam No. 2 presented itself to Congress. At that time when we were entering the readjustment period, the Congress, realizing the need for the practice of economy—rather, I would say, the Congress, realizing that a very large amount of money had already been expended in the whole project at Muscle Shoals—saw fit in its wisdom to stop the work on the big dam, where some seventeen millions had been expended. At that time I do not think Congress really understood the value and possibilities of this work. Be that as it may, the Secretary of War was directed to "take stock" as it were, of the property and ascertain whether or not the project was one in which the Government could afford to invest more money at this time. The Secretary also endeavored to ascertain whether or not there were private corporations or individuals who would be interested in the purchase or lease of the project. After "taking stock" the Secretary of War has found that the dam must be completed, and has said so without hesitancy.

General Beach, the Chief of Engineers, communicated with various parties, corporations, and individuals to ascertain if there were any who would be interested in the project. Henry Ford was the first to make a substantial proposal and one worthy of consideration.

In all earnestness let me ask you, gentlemen, do you believe there would have been other offers for this property and especially offers from the Alabama Power Co. and Engstrum if Henry Ford had not submitted his offer? Sitting here somewhat like a jury to pass on all the offers and all the circumstances surrounding them, the law and the facts in the case, don't you know beyond peradventure that this offer made by the Alabama Power Co. would never have been made had it not appeared that Congress might look with favor on the Ford offer?

The Alabama Power Co. is right there on the ground, and it is right here on the ground with all its genius, able sponsors, and advocates. That company knew probably more about the value and advantages of Muscle Shoals than any other company or individual could have known. Why did it not submit its offer when called upon by General Beach or at least within seven months after the Ford offer was submitted to the Secretary of War? Surely you gentlemen put no credence in the suggestion that capital was not available to them. Is it not remarkable how quickly capital became available just as soon as this committee began consideration of the Ford offer? When did these threats begin about litigation long drawn out? When were suggestions made as their contract which is beyond question a void contract? In so far as I can answer, not until they saw that Congress would consider the Ford offer, and now they rush in here with an offer of $5,000,000, an offer to complete

the dam without cost to the Government, less the cost of locks, etc., and leave the Government in control of its nitrate plants. I think the evidence here will justify the assertion that under their offer, if accepted, they would get over $30,000,000 worth of property for $500,000, because the cost of the locks is estimated to be $4,500,000.

Has it occurred to you gentlemen that the offer of Henry Ford has suddenly made the money market easy for the Alabama Power Co.? If so, even that company owes something to the Ford offer.

I think the evidence before this committee justifies the assertion that when Mr. Duke, the owner of the Southern Power Co., in answer to General Beach, condemned the Muscle Shoals project and said its completion was not feasible and that he would not be "interested" in its purchase or lease, he spoke for the great family of interests we find here condemning the offer of Henry Ford. In that family we find the American Cyanamid Co. and its child, the Air Nitrates Corporation, which corporation some evidence shows consisted of 10 men who put up $100 each and drew down more than a million dollars from the Treasury—yet they, too, were great patriots in times of war. We find the Virginia-Carolina Chemical Co., a member of the National Association of Fertilizer Manufacturers, whose president, Mr. McDowell, appeared here to protest against the Ford offer. We further find in that family also the Southern Power Co., whose president and owner "was not interested," and next we find the Alabama Power Co., the child of the Alabama Light & Traction Co., of the Dominion of Canada. I say it is the child of the Light & Traction Co., because all of its common stock, its voting stock, is owned by that foreign corporation, which is probably the great big "daddy" of them all.

I do not wish to be misunderstood. I would not heap condemnation on the Alabama Power Co. solely because it is the offspring of foreign capital. We do not hate capital in Alabama. We invite capital to come and help us develop our wonderful natural resources. We have proven that in Alabama, where our legislature has exempted this corporation from taxation and has made it the recipient of special favors.

It matters not where the capital comes from, so long as it is decent, we welcome it to our great resources, but we do not like to have all our resources monopolized by any sort of capital. In so far as the danger comes from the investment of foreign capital, if war should come we Americans can take charge of that capital in just about 15 minutes. Of course, I prefer our great wealth to be owned by citizens of the United States, but this is not the controlling thought in the minds of about 98 per cent of the people, or maybe 99 per cent of the people, of Alabama who are appealing to you to accept the Ford offer.

We say, gentlemen, that the Alabama Power Co. now owns practically all the available water-power sites in our State; that it does not need Muscle Shoals in carrying out its plans to develop the power and all the power the market of Alabama will need for several generations to come. We beg you to consider the fact that if this great water-power project is given over to the Alabama Power Co., that company will have a complete and perfect monopoly of the water-power industry of the State. Give this project to the Alabama Power Co. and they will develop it only in accordance with needs of that section for power. They will feed it out as the demand grows. The market is not there now. General Beach has told you so. Therefore we contend if the Alabama Power Co. gets control of this project it is not unreasonable to say that generations will pass before Muscle Shoals is developed to its fullest capacity. We believe if you give this contract to Ford, he or his company or companies will immediately begin work to get the benefit of the maximum amount of power to be developed there and on the upper reaches of the Tennessee, and the present generation will reap some benefits therefrom.

Gentlemen, it must appear to you and to the people of the country remarkably strange that only 7 or 8 or 10 months ago the very same interests, speaking through Mr. Duke, thought Muscle Shoals should be scrapped, or at least discouraged its completion, are now saying that the property is entirely too valuable to sell and lease to Henry Ford for the sum he offers and under the terms of his proposal. I am sure every man on this committee is convinced beyond a doubt that the action of Mr. Duke was inspired by the hope that this great national asset at Muscle Shoals could be secured in the future from the Government for a mere song. There can be no other conclusion. While Mr. Duke spoke only as owner of the Southern Power Co. there is no escape from

the conclusion that he was speaking also for the whole family of interests which have since protested against the Ford offer.

Regardless of propriety, it is but natural for those interests with which the Ford interests would compete in the markets of the country and the world to protest against the Ford offer. Mr. Ford expects to make aluminum steel. Of course the aluminum interests are opposed to that, and probably the steel interests as well. The hydroelectric power companies of the country do not care to have him mixing up in their business. He expects to make fertilizer. He guarantees to make fertilizer and fertilizer products in an amount equal to about 20 per cent of the demands of this country. He has gone far enough to guarantee to organize a $10,000,000 company for his operations. Of course, this will affect the price of fertilizer and the fertilizer interests are against him. The by-products and coke-oven fellows do not want him to get into a business that will materially affect their business, and so we find them scorning the Ford offer. So on it goes with all interests who fear that competition which will probably come with the Ford interests in control of and using this great power development of 1,000,000 possible horsepower and probably more to be developed on the upper reaches of the Tennessee River. I think I am entirely justifiable in saying that the interests now opposed to the offer of Henry Ford actually fear he will revolutionize industry along several lines.

There is no well-founded fear from these opposing interests. The field is big enough, broad enough, and inviting enough for all the genius, vision, brain, energy, and skill of each of these interests. The field for the uses of hydroelectric power is new and undeveloped. I believe the future has in store thousands of uses for electric energy undreamed of by the masses of men.

Your problem, gentlemen, if I may suggest, is not one involving simply a clash between individual or corporate interests. The real issue before you is how the interest of the people and of the Government can best be served.

The Alabama Power Co. is here to-day putting up, as we used to say in our day of football, strong "interference." They are trying their best to block the game. On the side lines there are not many rooters for their team, but the representatives of the people of this country had better keep their eye on the ball. This company works "in wondrous ways its mysteries to perform." Of course, you hear threats of litigation. Of course, you hear of their remarkable patriotism in times of war, when the truth is this company was actually hog tieing our Government. They permitted their Government to build a unit which can hardly be separated from their own. They permitted the Government to construct a transmission line on 20 miles of their right of way and bought the rest of 60 miles of right of way in their own name on which to build the line from their Gorgas plant to Muscle Shoals. They were paid a fee of some $285,000 for superintending this work, the Government paying for every piece of material and every hour of labor used in the construction of this unit and line at a cost of nearly $4,000,000. Now they will not even say what a reasonably fair value of this jointly owned plant and line is. All of these things were done, I contend, with some hope, if not feeling of assurance, that when the war was over the Alabama company would fall heir to the property or buy it for a nominal sum.

Shall the best interests of the whole country be now made subservient to the rights proclaimed by this company, which they secured or thought they were securing from the Government during the stress of war? It has never been made clear to me nor do I believe anyone can claim that the Government is legally bound by a contract made without the authority of law. Surely there is no legal obligation resting upon the Government under this contract. I can not agree that there is even any moral obligation resting on the Government. The Secretary of War had power to sell but not the power to contract to sell to one particular company sometime in the future, to the exclusion of all others who might desire to purchase. The act of July, 1918, gave him the power "to sell and report to the next Congress." Therefore even should he have given his representatives authority to act for him they could not bind the Government under this option to buy as set out in the contract.

Here we have the best interests of the public on the one hand and the claim of this corporation on the other. I would not advocate the condemnation of private property or the destruction of vested rights. It is a very easy matter to figure out what the actual investment is and the value of the interest of the Alabama Power in the Gorgas plant, which is beyond question a part and parcel of the whole project of the Government at Muscle Shoals adopted for the making of nitrates and fertilizer. It was made a part of the project with

the full knowledge and consent of the company, even though they may never have dreamed that anyone would offer to take over the whole project. It is true that the company conveyed to the Government their title at Dam No. 2 for $1. They say in their advertisements, which they are now running in practically every weekly newspaper in Alabama, setting forth, amongst other things, their abundance of patriotism, that their rights at this dam site cost them "just under" $500,000. The evidence here tends to show that it cost them $476,000. Let us admit that this is true; yet don't you know they had in view the final capture of this big dam site after the war for a very nominal sum, with the dam completed. This deed passed about the same time or just a few months before the signing up of this contract that is so full of patriotic fervor. While the Alabama Power Co. is spending so much money advertising its patriotism throughout our State, why does it not set forth the terms or just a few of the terms of this contract? Why does it not publish to the masses of the readers of these county weekly journals article 22 of the contract and the terms under which they were given an option to purchase? I do not condemn the officers of this company for their appearance here in behalf of the company they are paid to represent. I know and like many of them personally and would not speak derogatory of their integrity, but I can not agree that they have a meritorious case, and I know their offer can not compare with the Ford offer if the welfare of the public is to be well considered.

I have presented to your committee memorials and petitions from every section of our State urging the favorable consideration and the acceptance of the Ford offer. I may be mistaken, but I am firmly convinced that a majority of the people of the whole country favor his offer. They favor his offer because it conforms to the wise policy of Congress in adopting the Muscle Shoals project, and they further believe Ford should be given control of this great project because under his control and operation the full benefits of its development will accrue to the public. They believe this project, this great national asset, should not be turned over to any company exclusively in the power business, and with which the making of explosives and fertilizers is of secondary consideration. They believe, and I believe, that Henry Ford or his companies is the only agency interested that will develop Muscle Shoals to its fullest capacity and give the people of the country the direct benefits of that development.

In speaking of Mr. Ford, I do so without that same degree of admiration or reverence that many people possess. I do not find myself in accord with all of his economic and political ideals. I must confess that I do not subscribe to the belief that he can immediately give employment to 1,000,000 men at Muscle Shoals if his contract is accepted. It might be done ultimately, and I think will be done. I do believe, and you gentlemen as well as all others must admit, that Henry Ford is a wonderful genius, a great financial wizard, and stands in a class by himself as one of the world's foremost captains of industry. Indeed, he is in a class by himself, and as some one has said, he is something of a great commercial iconoclast. He is one of the world's richest men, with a world-wide business, and yet a business that is not interlocked with other great interests. He asks no favors of the moneyed powers and begs no quarter of other big business. Everyone must admit that he has done more to add comfort to American farm life and given greater inspiration toward the building of good roads by the production and sale of his automobile than any other hundred men in the same business or any other man who ever lived.

The people of this country believe in Henry Ford as a great developer. They believe he will do what he promises to do. They believe he will make a success of Muscle Shoals to the people's benefit; that he will spend fifty millions and more if his contract is accepted to make agriculture and farm life more attractive and profitable by the production of a concentrated and higher-grade fertilizer. We believe he will prove that the fertilizer industry is in its infancy, just as the expert Doctor Whitney said it was. If he can save to the farmers of this Nation the freight and bagging of about sixteen hundred pounds of material that is absolutely without value as a food for plants in every ton of fertilizer, then the great benefits he will bestow upon the people of the agricultural industry alone can not be figured out in dollars and cents. It would run into the hundreds of millions.

Of course, the coastal plains and the Gulf territory now use most of the commercial fertilizer manufactured in this country, but as the years go by every section of this country where agricultural pursuits are followed will need

soil and plant food which can be made at Muscle Shoals. In this respect therefore the project is a national one, to say nothing of the preparedness of the Nation by having a plant ever in readiness to make explosives. The investment of the Ford millions at Muscle Shoals will add much to the taxable valuations of the Nation. You will recall the testimony which showed that immediately after the war between the States, North Carolina was the poorest State in the Union and to-day she pays more taxes per capita than any other State in the Union as a result of the investment in hydroelectric power.

These great interests here who are fighting the Ford offer are using all their wits and power to abate your decision and final action, and trying to delay the decision of the Congress as much as possible. What better way could they bring about delay than to have another offer presented every week or so and then have the Alabama Power Co. threaten the Government with a legal fight to the last ditch. If they can persuade you that the Government is so entangled with them, that it is "hog tied" in a contract that will becloud the real issue, that the interests of the Government are now so interwoven, it can not extricate itself from the hold they have, then the fight of the interests opposing the Ford offer is won.

You may ask, How do you know Mr. Ford will live up to his proposal? That question was asked by some member of the committee. We do not know that the sun will shine to-morrow. We do not know that we will be alive to-morrow. We judge the future by the past. If a man has always lived up to his agreements, if he has accomplished every task he has undertaken, and especially if he has the means to carry out his promises, we can very safely predict that he will continue to act in good faith with his fellow man and with his Government. Again, the very proposal itself of Mr. Ford provides that his contract shall be forfeited in the event he fails to live. He could not afford to break faith with the Government.

The delay in disposing of Muscle Shoals has already cost an immense amount of money and is to-day costing nearly $10,000 a day to keep the plants and property in their stand-by condition. It has been estimated by Mr. Smith of the Mississippi Valley Association, comprising 55 per cent of the people of the country, that the cost to the Government already accrued by delay in completing this project and accepting the Ford offer would amount to over a million dollars.

Let us say, gentlemen, that you find, for the sake of argument, that the offer of the Alabama Power Co. is the best offer from a standpoint of finances. Then I ask what are you going to do with the nitrate plants? Are you going to put the Government into business? Let us hope not. I maintain that the Government can not economically operate any business. Do you really believe that anyone is coming along to offer us anything for the eighty millions invested in these plants without the assurance of more than 100,000 secondary horsepower with which to operate them. If not, are you going to junk them? We have had enough of Government operation of business. We have not forgotten the railroad under Government control, nor a merchant marine that cost us $1,000,000 a day net loss for about a year. If you do not put the Government in the business of making fertilizers at Muscle Shoals, which would in the end cost the taxpayers much more than they now have there invested, and you have no offer to take over and operate the nitrate plants by private capital, how will you keep a plant in readiness to make explosives in times of war? These questions all find their answer in the acceptance of the offer made by Henry Ford. He is the only one who has come forward at the request of the Government and submitted an offer that in my judgment you can seriously consider. At the end of the 100-year lease to him the property returns to the people. He offers to pay back to the Government the cost of completions of the dams, while at the end of the 50 years of lease to the Alabama Power Co. the Government can only get control of the plant by paying that company for its investment under the water-power acts of Congress. I firmly believe the people of this Nation would derive more from this great God-given asset at Muscle Shoals even if the Congress gave the whole project to Henry Ford than they can ever hope to gain by selling it under any other offer which has been presented to you.

On behalf of the people of my district and my State and in the interest of the public let me suggest that the proper solution of your problem lies in the acceptance of the offer of Henry Ford.

Mr. MARTIN. Mr. Chairman, I wish merely to ask the privilege, in behalf of the Alabama Power Co., of filing in the record a statement answering statements that have been made this morning, so far as they affect the Alabama Power Co., as we, of course, would have no opportunity to do so after the matter reached the committee.

The CHAIRMAN. That is a matter which the committee will take up immediately after we get into executive session. Personally, I would have no objection to it. That is simply fair play, so I think there will be no objection, Mr. Martin; I will take it up with the committee.

(NOTE.—The committee agreed to the insertion of the statement, which is as follows:)

STATEMENT BY THOMAS W. MARTIN, PRESIDENT ALABAMA POWER CO., IN ANSWER TO STATEMENTS MADE BEFORE MILITARY AFFAIRS COMMITTEE OF THE HOUSE OF REPRESENTATIVES ON MARCH 8, 1922.

1. Congressman Oliver included in his statement certain resolutions which, he stated, were adopted at a mass meeting recently held in Montgomery.

The first charge against this company is that it owns and controls a number of power sites on several rivers in Alabama and that in 14 years since its incorporation it has built but one power dam and commenced work on another, and that it has been the policy of the company to develop only such power as could be sold in small units and at high prices.

This statement is both misleading and untrue.

By act of Congress of 1907, authority was given to construct a power dam on the Coosa River at Lock 12, and the development was completed with 110,000 horsepower within the time fixed in the act.

From 1912 to 1920 no act of Congress was passed granting authority to construct dams in navigable streams at any place in the United States. In fact, any construction of such dams was prohibited by the act of Congress of 1899, and this act was construed by Government engineers even to require Government approval before dams could be constructed on the Tallapoosa and Little Rivers, because such dams might affect the navigable capacity of the Coosa and Alabama Rivers, into which those rivers emptied.

2. In 1912 a bill was prepared by Mr. J. W. Worthington, then vice president of this company, to authorize a second development on the Coosa River, and it was introduced in Congress. The bill was passed by Congress, but vetoed by President Taft because it did not contain certain provisions now in the Federal water power act. From that time until 1920 water-power development was discussed continually in Congress, and during that time no special act of authority was given for any development to proceed, it being the policy of Congress to await the passage of a general act under which all developments would be placed on the same basis respecting the terms and conditions of the development.

3. Mr. Worthington, again acting under the instructions of this company, presented a proposal to the Government engineers on December 10, 1913, for the construction of Dams Nos. 2 and 3 at Muscle Shoals in connection with the Cherokee Bluffs and Little River storage developments, and this plan was recommended by the Government engineers. (H. Doc. 20, 63d Cong., 2d sess.)

The public in Alabama was well aware that the Muscle Shoals Hydroelectric Power Co., a subsidiary of the Alabama Power Co., originated and was for many years active in keeping before the people of Alabama the importance of that development, both for industrial and municipal purposes and for navigation. After a considerable expense and years of labor, the question assumed more than local importance until Congress provided a large sum with which to make the necessary engineering explorations, the collection of data, and information looking to the adoption of the project by the National Government in coperation with private capital. No one at that time in Alabama questioned the purposes of this company, impugned its motives or assumed to suggest the approach of a power monopoly that would ultimately throttle and retard the development of the State. Many of those who now denounce the company were its most enthusiastic supporters, and with full knowledge of its plans to connect Muscle Shoals with the storage reservoirs in east Alabama, urged that the work go forward. Delegations journeyed to Washington and importuned congressional committees. The Alabama delegation in Congress was earnestly active in advancing the plan. Indicative of the popular feeling, the Sheffield Standard, a newspaper published in one of the cities where the development is located, contained the following editorial, in 1914, entitled "Away with demogogy":

"* * * Now, after 30 years of waiting, that a corporation has been formed big enough and with sufficient ability to develop this power, many politicians

have been foolish enough to raise a hue and cry against the Muscle Shoals Hydroelectric Power Co. They have declaimed throughout the length and breadth of the land that the greater water power at Muscle Shoals is about to be seized and appropriated by a monopoly. Other politicians, like Mr. Underwood, Mr. Dent, Mr. Heflin, Mr. Burnett, Judge Almon, and Mr. Blackmon, have openly declared in favor of the development of this power by the Muscle Shoals Hydroelectric Power Co. In each case the people of Alabama have, as any man with a grain of sense knew they would, rebuked the demagogue, who, for his own selfish reasons, has stood in the way of progress and development, and set the seal of approval upon the constructive statesmen who have proclaimed from the stump that if elected to office they would encourage and support the development of Alabama's water powers. * * *

"Corporations of old adopted 'the public-be-damned' policy; the Muscle Shoals Hydro-Electric Power Co. has adopted the 'public-be-told' policy. * * *

"Men of Alabama, let us arouse ourselves! Mobile Harbor must be made the gateway of the Southern States to the Panama Canal. Reservoirs must be built in the headwaters of the Tallapoosa, which will conserve the spring freshets, prevent them from deluging the farms in middle and south Alabama, and turn them loose during the periods of low water, so that Alabama's rivers may be navigable 12 months out of the year. The vast power on the Coosa and the Warrior and the Tallapoosa and the Tennessee must be harnessed and put to work. Let us have more James Mitchels, of London, bringing British gold for Alabama's development. Let us have more J. W. Worthingtons and Frank S. Washburns. And for God's sake and the sake of prosperity and development of the State, let us have fewer Mabrys, Wattses, and Callahans."

4. No action having been taken by Congress on our proposal of 1913–14, a further study was made by the Government engineers and the same plan again approved in their report of 1916 (H. Doc. 1262, 64th Cong., 1st sess.), excerpts from which we have filed in the record. It was, however, recommended in the last report that in view of the passage of section 124 of the national defense act of 1916, action on the proposal be suspended until it was determined whether the Muscle Shoals power would be utilized for the nitrate plant.

5. In 1918, after our country entered the war, the Government determined to develop the Muscle Shoals power for war purposes. We thereupon donated the Wilson Dam site to the Government and transferred to it for $1 titles and rights in connection with which we had already spent just under $500,000. The Secretary of War acknowledged our donation, saying, "I beg to acknowledge with thanks the company's generous and public-spirited action." The act of the company in making the donation was commended throughout our State by those who felt that by so doing we had hastened the development and had contributed to the upbuilding of the State.

6. Shortly after the Federal water power act became a law, in 1920, we filed application for a second power development on the Coosa River in Alabama, to have an installed capacity of 120,000 horsepower, costing upward of $8,000,000. The application was granted and license issued to the company, and construction is now under way on this development.

In response to the letter of the Chief of Engineers, we advised him on May 28, 1921, that in our judgment the Muscle Shoals project was an economical and profitable undertaking, and that we were prepared, as in the past, to cooperate with the Government in any way desired looking to its completion.

We again advised the Chief of Engineers on July 14, 1921, that on account of the increased demands for power, we would have to proceed promptly with another power development unless the Government policy at Muscle Shoals should be modified to permit the use of part of that power in public service.

It will thus appear that this company made efforts for many years, through its representative, Mr. Worthington, and others, to obtain the consent of Congress for power developments in Alabama, but the laws remained unchanged until the Federal water power act was passed. This was well known to at least two of those who participated in the Montgomery mass meeting, namely, Mr. J. W. Worthington, formerly an officer of this company, but who is now Mr. Ford's representative, and Mr. J. L. Andrews, one of the signers of the resolution, who is an attorney residing in Sheffield, Ala., and who was regularly retained by this company in the Muscle Shoals district from 1912 to January 1, 1922.

Although we have been able to make but one power development in Alabama, there being no Federal legislation until 1920, we have extended our lines in various parts of the State, and with the aid of reserve steam plants now have

a connected load in excess of 370,000 horsepower. More than 80 per cent of this load is used for industrial purposes, and we have many consumers whose demands run from 5,000 to 25,000 horsepower.

7. In 1907, before any large power developments were made in the State, the average cost per horsepower year was $72, and in 1917, due to the direct influence of the power developments of our company and others, had decreased to $21 per horsepower year. On the other hand, in the State of Mississippi the cost per horsepower year was $97 in 1907, and this had decreased to $93 in 1917. In this period of 10 years there was no water-power development in Mississippi, and hence no large central-station systems. This shows in the most striking way the great advantage to the public of having power distributed to the public and also answers the statement that our company has only developed power which it could sell in small units and at high prices.

8. It is also charged that our company controls the utilities in our principal cities. We have no interest in the utilities at Birmingham, Montgomery, and Mobile, the principal cities of our State, but furnish the power to the utilities operating in Birmingham and Montgomery. We do control, however, the utilities in a number of the other towns and cities. In every case our company has taken over utilities or constructed systems in response to the public demand and we have throughout our system reduced existing rates in almost every community, or put in new and lower rates for all classes of service. We have now approximately 17,000 direct customers, and including the customers of other utilities there are more than 60,000 consumers of light and power served from our system.

OWNERS OF COMPANY'S SECURITIES.

9. The Alabama Power Co. is a corporation organized and existing under the laws of Alabama. The company was until August, 1914, largely financed abroad. We have stated before this committee and on various occasions in Alabama that this plan of financing was changed on account of the war in Europe, and since 1914 the company has been entirely financed in the United States. We have also stated to this committee that if we proceed with the Muscle Shoals project it will be entirely financed in the United States. Congressman Almon quotes from a statement made by this company in 1918 with regard to source from which the capital was obtained for our early development. He only quoted a part of that statement, which contains a full explanation of our financing plan since 1914, and I am sure he did not mean by omitting a part of the statement any unfairness to our company, but if he had made a further quotation he would have confirmed just what we have on several times stated to this committee. Since 1914 the flow of securities to this country has been so great that of its total issues at this time not over 35 per cent or 40 per cent are held out of the United States. As noted above, it was widely known in Alabama in 1914 that we were making developments with foreign capital. Congressman Almon, who was most interested at that time because the proposed Muscle Shoals development was in his district, not only did not oppose the plan but openly favored the development by our company, as noted from the above newspaper comments.

The company has several thousand stockholders in Alabama and in other sections of our country. For many years a large majority of our board of directors has resided in the State of Alabama. The plans and policies of the company have in fact been controlled by citizens of that State for many years.

To safeguard the national welfare, the Federal water power act, section 16, authorizes the President, whenever in his opinion it may be necessary, to take possession of any project constructed under the act "for the purpose of manufacturing nitrates, explosives, or munitions of war, or for any purpose involving the safety of the United States." The Secretary of War, in transmitting the offer of the power company to Congress, said (par. 7): "This broad provision of the act is of special importance to the United States in view of the location of the nitrate plants at this community."

Therefore, it is of no importance that some of the early securities of the company are held out of the United States, for the licenses and its property are always subject to the laws of the State and Nation.

THE GORGAS STEAM PLANT.

10. The Alabama Power Co., prior to 1917, acquired and owned the Gorgas steam plant, which had been constructed as the reserve steam plant for its system. It owned a small tract of land for the plant site, had the usual

facilities for such plants, including water intake and discharge tunnels and foundations for a three-unit plant. In order to provide for the coal necessary for the operation of the plant the Alabama Power Co. financed the coal operations then and now being conducted immediately at the plant. These facilities made it possible for the company to generate steam power at the lowest possible cost to supplement the Coosa River power in times of low water.

When the Government decided to construct the nitrate plant during the war, it is a matter of record in certain hearings that the existence of this steam plant, together with the large hydropower plant of the company on the Coosa River, was the controlling factor in the location of the nitrate plant at Muscle Shoals, because it was necessary to have a large amount of power within six months. No water-power plant could be erected at Muscle Shoals within less than three or four years, and a new steam plant could not be erected at Muscle Shoals in time to meet the requirements of the Government at nitrate plant No. 2. Government officials then turned to our steam plant and to our system in general for this immediate supply of power. It was agreed that we would build a transmission line 90 miles to Muscle Shoals, and we did build the line, bringing it into operation within less than five months, thus enabling the Government to obtain power in advance of the schedule on which the work was then proceeding. The company was serving many industries, and at least 80 per cent of its power was being used by those which were classed as essential for the production of materials for use in the war. It was, of course, within the power of the Government to suspend the delivery of energy to any of these consumers, but it was admittedly of great importance by Government officials that this service be not interrupted.

It was also decided that the Alabama Power Co. at times could furnish some power, but it did not have sufficient capacity in order to enable the company to deliver continuously the amount of power needed at the nitrate plant. The Warrior facilities for installing a second unit were so far advanced that six months or more in time would be, and were, saved by making the extension of that plant. Time, as we all know, was of the greatest importance in the war period and all things made subordinate to that important factor. Therefore the Alabama Power Co. was directed in December, 1917, by the Nitrate Division of the Government, to build a transmission line on rights of way of that company for the United States, and to erect at Warrior on its lands for the United States, an extension to its Warrior plant. At the same time the Alabama Power Co. agreed, at the request of the Government officials, that if the law permitted the Government to sell its interests in these facilities, the company would purchase them at fair value. The desire of the Government was to proceed in the quickest possible way to obtain power, having also in view limiting its investment and making a plant which would obtain for the Government the best possible salvage after the war. Those Government officials who know the facts, as Secretary Weeks, Major General Williams, Colonel Joyes, and Major Burns, have raised no question whatever as to the fairness of this contract with the Government and have expressed the view that, aside from the legal phase of the contract, the Government has a moral obligation to carry out in its agreement with the power company.

In the very beginning of the negotiations the Alabama Power Co. explained that the cost of an extension of the capacity desired by the Government would be more than the demands of the company warranted; however, if the Government would aid it in securing the funds with which to make such an extension that it would do so. Effort was made by the Government officials to advance funds with which to build the plant, but it was found that there was no law under which it could be done. Thereupon, the company agreed to buy upon demand of the Government its interest in the plant and substation at Gorgas. It further agreed to maintain the plant and to pay, during the time the Government was taking power under the contract 6 per cent interest on the actual cost of the Warrior extensioon and the Warrior substation, and when the Government was not taking power under the contract to pay the Government for the power generated by said extension. Here, then, is property of the Government located where it has a going value as compared with a junk value received for most all salvaged property acquired during the war emergency, and maintained without cost to the Government under an agreement from which the Government will always receive a return until it demands the Alabama Power Co. to purchase it at its fair value. There has been no criticism

of the rate at which the Alabama Power Co. agreed to furnish power, but on the contrary Colonel Joyes testified the Government got it on very favorable terms.

Reference is made to the company's letter of November 6, 1917, to the Ordnance Department, with regard to the building of an extension to the steam plant at Gorgas. It was soon found that this extension would not furnish the sufficient power required by the Government and was also based on financing through the War Credits Board. Here again those who wished to be fair could have learned that the program desired by the Government was different from that which was understood by our company, and, of course, resulted in an increased expenditure.

Certainly no one in Alabama who wishes to be fair need repeat the error of the Graham report to the effect that in 1917 we had at Warrior an old plant with indifferent machinery. To the contrary, our plant was just completed and modern to the last detail when the Government took up the matter with us. Those officers of the Government who know the real facts about the matter have but recently spoken plainly and finally that this contract was one of the best from the Government's point of view made during the war period. The Graham report refers to our system as being a small system, poorly equipped before the war, which every citizen of Alabama knows is wholly incorrect. All of our plants and lines were new and modern and had only been in service some three or four years. In this idea alone lies the principal error of the Graham report, for it was on that erroneous assumption that the committee undertook to criticize this contract. All of the facts have been brought out at the present hearing. In addition to the investment which the Power Co. had in its plant at Gorgas prior to the war, it has many lines and stations directly connected with that plant, at the same time having a large investment in a coal mine to obtain the coal required for its operation. The plant is absolutely essential to enable the company to carry out its public-service obligations in times of low water on the Coosa River. There is no possible place at the site for two plants. The plant extension in which the Government has an interest is so connected with the situation that it would not be possible to operate them separately. This was the view from the first and was just in line with the Government's policy in many plants of this nature, as well as for shipbuilding, munitions, etc., whereby existing facilities of manufacture were extended to meet war needs and at the same time enable the Government to dispose of them to the best advantage after the war. It was pointed out at these hearings by one of the Government officers that in respect to the greatest number of these Government contracts the owner of the land had the right to refuse to buy the additional facilities, and if he refused, they should be removed by the Government, whereas in the case of our contract we obligated ourselves to buy the additional facilities at fair value to be fixed by arbitrators, thus insuring that the Government is bound to receive a very substantial value for them.

If Congress should direct the condemnation of only a part of our land at Warrior it would destroy the usefulness of our entire plant there for any other purpose, rendering our investment in coal mines practically useless to us and imposing obligations and burdens upon this company which would be very serious. It would affect our ability to serve many customers of the company if their power supply were taken away without any opportunity to obtain other power for their continued operation. In other words, we wish to point out definitely the very serious element of public interest involved in such a course.

THE ATTITUDE OF THE PUBLIC IN ALABAMA TOWARD COMPANY.

11. In December, 1921, the Power Co. invited many citizens of the State to the dedication ceremony of the Mitchell Dam, now under construction on the Coosa River. There were more than 500 representative citizens in attendance at the ceremony. Public comments from every section of the State commended the Power Co.'s public-spirited attitude in its undertakings.

After describing the dedication ceremony, this statement is made in the Montgomery Advertiser of December 20, 1921:

"Mr. Martin expressed regret that Gov. Thomas E. Kilby found it impossible to be present and introduced Attorney General Harwell G. Davis, delegated to represent the governor on the occasion. Mr. Davis delivered a message from Governor Kilby in which the executive expressed appreciation of the great serv-

ices rendered by the man for whom the dam was named; of the value of navigation opened by this construction, as well as the energy created.

"President A. G. Patterson, of the Alabama Public Service Commission, speaking for that body, said that Alabama recognizes the necessity that justice and equity be done both to the utility corporation and to the people of the commonwealth; that such institutions are properly regarded as servants of the people, and it becomes the duty of the commission of which he is a member to place a reasonable valuation of such properties and then to permit these utilities to make a fair return upon their investments. He said that the commission stands between the utilities and the people.

"Oscar Wells, president of the First National Bank, of Birmingham, spoke of the great value of the service to be rendered by the further harnessing of the Coosa. This power, he said, is not lessened by use, nor can it be stored up for future generations by not being used. He spoke of the value of the industries to be made possible by the electric power to be produced at Mitchell Dam, which will be distributed over 1,500 miles of high-tension lines serving more than 16,000 consumers in 60 cities and towns of Alabama."

The Birmingham Age-Herald of December 20, 1921, contained the following:

"In the absence of Governor Kilby, who expressed his desire to be present but his inability to attend through the speaker, Attorney General Harwell G. Davis made a short talk in which he expressed pleasure as an official of the State to be present at a ceremony connected with the development of the resources of his State. He referred to the vision of Mr. Mitchell in sensing the measure of the water powers of Alabama and to his stoutness of heart in putting over the enterprise in spite of many difficulties.

"He forecasted the time when, with the completion of the Mitchell and the other dams to be built, the Coosa would be navigable from Rome, Ga., to the Gulf and carry Alabama products over all the seas.

"A. G. Patterson, president of the Alabama Public Service Commission, said monarchs of Egypt had built the Pyramids in order to perpetuate their memory, but that Mr. Mitchell had built to serve mankind. He thought Mr. Mitchell's work was much the greatest. Mr. Patterson outlined the duties of the commission with respect to utilities, saying it was to see that they gave service to the people, on the one hand, and that, on the other, they were enabled to give that service by being allowed to earn a fair return on a reasonable estimate of the value of the service."

The Labor Advocate (Birmingham) of December 24, 1921, contained the following:

"At 11 o'clock Monday morning over 500 invited guests of the Alabama Power Co. arrived at the site of Mitchell Dam. This dam is located on the Coosa River in Chilton County and is an ideal location for a stupendous object of the kind. At 12 o'clock President Martin called the assemblage together and made an eloquent and statistical address as to what the company proposes to do at this place. He was followed by the following speakers: Attorney General Davis and A. G. Patterson, president of the Alabama Public Service Commission, and Oscar Wells of the First National Bank of Birmingham."

The Chilton County News of December 22, 1921, contained the following:

"Last Monday one of the largest audiences gathered at Mitchell Dam that has assembled in Chilton County in many days to do honor to the memory of Mr. James Mitchell as one of the greatest promoters of water power this country has possessed in many years. * * *

"Hon. Harwell Davis was present and expressed Governor Kilby's regrets at being unable to attend owing to pressing business reasons. Mr. Davis, in a few well-chosen remarks, called attention to what a wonderful man of vision Mr. James Mitchell was.

"Mr. A. G. Patterson, chairman of the Public Service Commission of Alabama, was also present and briefly stated how the public service commissioners had endeavored to treat the great company fair and at the same time see that the public received their share of the resources. He also did not fail to show the great responsibility of the commission of which he is chairman. He said that he was glad to see these great developments and of their usefulness.

"Mr. Oscar Wells, president of the First National Bank of Birmingham, made the last address of the occasion. He stressed that we were here to honor Mr. Mitchell. He also stated that bankers were always interested in such wonderful development. He said that with such enterprises as Mitchell Dam completed that economy could exist in every industry in the country and

greater developments in agricultural pursuits would be one of the important factors as well as all others."

The Birmingham News of December 18, 1921, contained the following:

"The benefits to the people of Alabama from the developments at Mitchell Dam are threefold: An addition of 100,000 horsepower for developing industries and the resources of the State, increasing the distance over which the Coosa River can be navigated the year round, and marking a long step forward toward the final developments which will open the whole stream to year-round navigation; in preventing damage each year from floods, which have at times greatly hurt the agricultural sections and many of the towns along the river."

The Gadsden Daily Times-News of December 19, 1921, contained the following:

"Several hundred representative citizens of northern, central, and southern Alabama attended the dedicatory exercises at Mitchell Dam on the Coosa River near Verbena on the Louisville & Nashville Railroad to-day. * * *

"The Alabama Power Co. has been for several years expending about $5,000,000 per annum in development and this schedule is forecasted for several years to come. * * *"

The following comments appeared in the Birmingham Age-Herald of December 15, 1921:

"About ready to pour concrete in Mitchell Dam near Verbena. That close to seeing the mighty weight of the Coosa tumble into turbines and generate another 120,000 horsepower of electric current to drive machinery, operate car lines, and light cities and homes in Alabama.

"Money at the rate of $5,000,000 per annum has been pouring into Alabama and counting for Alabama development in this one avenue of natural-resource exploitation. Money at that rate will continue to come into Alabama during a series of years.

"At first one does not sense what things like this mean. In time, as they emphasize the individual's prosperity through that of his section, light begins to shine and big men and big institutions come in for correct estimate of their value in the general plan.

"It is no small thing to be placing $5,000,000 per annum in a State in ways that count for the permanent good. Amounts like that are not obtainable by small men, small concerns, isolated effort, individual exertion. They come only when aggregate capital is interested and feels confidence in the people and places where the investment is to be made. * * *

"Alabamians are no longer afraid of a man or concern on account of bigness. They have become broad-minded and high-thinking themselves and they welcome other big men, big brains, and big capital. It is well they do."

12. On account of the power shortage prevailing during the fall of 1921 and also to meet the needs of additional power during the present year, the Secretary of War leased the Government steam plant at Sheffield to the Alabama Power Co. We have, for some time past, rendered assistance to the power companies of Georgia, North and South Carolina in times of drought and emergency, and the lease of the Sheffield steam plant will enable this service to be continued. Following the lease of this plant by the Secretary of War, approval was expressed in almost every section of the South on the fact that the power lines of this company had been connected with the lines of the power companies of Georgia, thus completing the interconnection of the systems of the companies in the Southeastern States. In view of the statements made by one of the Members of Congress from Alabama regarding the public attitude toward our company, we wish to refer to the following comments concerning the leasing of the Sheffield steam plant:

The Raleigh News and Observer of October 28, 1921, carried the following item, which shows the difficulties experienced by industries and the public generally before the lease of the Sheffield steam plant, the necessity for additional generation capacity in the Southeastern States, and the means adopted by the power companies in this section of rendering assistance to each other in cases of emergency:

"Beginning to-day, the Carolina Power & Light Co. will furnish full service to 60 large cotton mills and more than a score of other important industries that have been forced to shut down for two and one-half days each week during the present month because of lack of current.

"Resumption of maximum service has been made possible by arrangements that have been made to receive surplus power from the Alabama Power Co. and

by the operation of the company's auxiliary steam plant at Method, which has been idle during the summer and fall on account of the drought.

"Water for the operation of the steam plant will be hauled from Crabtree Creek over the Seaboard Air Line in tank cars. * * * Several weeks ago the company made efforts to secure the water needed for the operation of steam plant from wells, but has been able to secure only about 50,000 gallons a day, approximately one-fourth of the amount required. * * *

"Although power companies in this section have frequently interchanged current, the Carolina Power & Light Co. is the first to receive current through several intervening transmission systems. Current is not actually passed from Alabama to North Carolina, each of the intervening companies simply giving the company next in line an amount equivalent to that received.

"The linking of these large lines so as to make possible the interchange of current is in line with investigations made by the Government during the war with a view to the greatest utilization of hydroelectric power, but the scheme has never before been put into operation. * * *."

The following is an excerpt from an item appearing in the Birmingham Age-Herald of October 26, 1921:

"The Alabama Power Co. began to-day transmitting 5,000 to 10,000 kilowatts of steam power to the Georgia Railway & Power Co. for partial relief of the power shortage in North and South Carolina, a distance of some 400 miles from points where the power is generated. This is not sufficient to meet present urgent requirements in those States, and on account of the drought it may be necessary to discontinue such transmission of power at any time."

The following is an excerpt from an editorial of the Mobile Register:

"Owing to the long season without quantity rainfall many mills in North Carolina, which derive their power from water flow, have been idle because the streams are flowing at far below normal capacity, and thus have greatly lessened their ability to produce electric current. In this emergency it has been found feasible to utilize the excess current produced in Alabama by transmitting it through a number of intervening plants to Charlotte and other industrial centers. By this means a number of mills have been enabled to resume activity and great numbers of people have been given employment. This is an achievement worth while, and indicates the wide benefit that may follow the development of the rest of Alabama's potential, including that of Muscle Shoals. Alabama's possible distribution of power covers many States, not only adjoining States, but those lying several hundred miles distant."

An editorial of the Atlanta Constitution of October 28, 1921, says, among other things:

"Hydroelectric power interests in the States of Georgia, Alabama, North and South Carolina, and Tennessee have joined requesting the War Department to put the Federal-owned steam plant of Sheffield, Ala., into operation at once to provide additional electric current for power as a safeguard against the threatened deficiency resulting from the present drought throughout the Southeast.

"The situation is similar to that which seriously crippled industry in this section in the fall of 1918, when a protracted rainless season caused such a diminution of hydroelectric power production that extreme measures had to be adopted to guard the supply.

"In north Georgia it was necessary for all power consumers to curtail their consumption. Many of them at great expense were forced to rehabilitate the steam plants which they had previously abandoned, and others were driven to the extremity of installing entirely new steam power equipment in order to keep their factories running. * * *

"Fortunately, the various power companies in five Southeastern States involved have cooperated in such a way that one system can be connected with the feed wires of any other, the effect being the same as though the entire interlocking and interchangeable system were fed by a single great source of electric supply."

The following is an excerpt from an editorial of the Birmingham Age-Herald of October 27, 1921:

"The steam power plant at Sheffield, built by the Government in connection with the nitrate works there, has a capacity of 60,000 kilowatts, or 90,000 horsepower. It is completed and ready to operate. It should be started.

"Rivers are low in Alabama, the Carolinas, Georgia, and Tennessee. The Alabama steam plants operated by the Alabama Power Co. are furnishing what

power can be spared to help out the distressing situation in the Carolina mill sections. If the Sheffield plant is also brought into service, Alabama's steam power will be doubled and she can transmit that much more power to prevent industrial and financial losses in these sister States.

"The Secretary of War has been asked by Alabama's public service commission and the commissions of other States to allow the operation of the Sheffield plant. The request should be granted and the plant put into immediate service."

The following is an excerpt from an editorial of the Union Banner of Clanton, Ala., on November 17, 1921:

"This action of the Alabama Power Co. is deserving of praise in that it means that many people will be restored to their work and their names placed back on weekly pay rolls by the resumption of operations by mills and factories upon which they depend for the daily bread and clothing of their families. It means that the consumption of much raw cotton by factories in those States will continue, which in turn will draw that raw cotton from the markets of the South. The beneficial influence of this step of the power company will be felt directly in many cases that the average person may never think about."

The following is an excerpt from an article in the Washington Post of October 30, 1921, quoting an Associated Press dispatch from Charlotte, N. C.:

"What is described as the 'first superpower zone' was put into actual operation this week, according to announcement to-night from the general offices of the Southern Power Co. here, through the utilization of surplus hydroelectric power in Alabama. Half a dozen textile mills in central North Carolina, which have been idle for weeks because of lack of electric power resulting from drouth, were enabled to resume operations, says the announcement.

"The Alabama Power Co. transmits power to Central Georgia Power Co. That company puts upon the lines of the Columbus Power Co. a like amount of its own power. Similarly the Columbus company transmits power of its own generation to the Georgia Railway & Power Co., which in turn through its tie-ins with the Southern Power Co., delivers to the local company a like quantity of current. The Charlotte company then delivers to the Carolina Power & Light Co. an amount of power equivalent to that which is received from its Georgia connection."

The Birmingham News of December 18, 1921, contained the following:

"Recent payment of huge sums of money by corporations doing business in Alabama affords signal and immediate relief to the educational institutions of the State. * * *

"Whoever, therefore, has been in the habit of constantly prating of the evils of trusts and corporations and the iniquity of 'foreign capital' should pause a while. These so-called foreign moneys when they are invested in Alabama industry and development become Alabama moneys. The interests promoting them become our common interests. They plant their roots here with a view not only to get gains but to grow along with us, contributing their pro rata share to the upkeep of the government.

"There are two kinds of capital—the sort that takes all and gives nothing and the capital that practices reciprocity. A fool should be able to discriminate. The capital that creates new pay rolls and that develops a State's natural resources and that pays substantial taxes into municipal and county and State treasuries is benevolent capital. There is nothing foreign about it. It makes no matter whether its stockholders live in New England or old England, whether in Chicago or Zanzibar. They have cast in their lot with us for better or for worse."

13. There might be added many other statements to show the attitude of the public toward this company shortly before it filed its offer to complete the Muscle Shoals project. Expressions which have come to this committee from the public in Alabama have evidently been largely worked up by propaganda.

Shortly after the filing of Mr. Ford's offer articles appeared in the papers of Alabama to the effect that he intended to build cotton mills, automobile factories, nitrate plants, and other industries in a 75-mile city along the Tennessee River; would build or take over railroads traversing the State, open coal mines, ore mines, steel mills, make aluminum, employ a million men, and add to the wealth, prosperity, and happiness of every section of Alabama and of the South. Many of these statements were doubtless printed without any authority from Mr. Ford.

At the same time, there are many citizens of the State moved only by public interest who feel that our offer should be accepted. Still others think the

Ford offer should be accepted but are not in sympathy with the propaganda against this company.

The governor of the State in a recently published statement said with reference to our contract with the Government concerning the Warrior plant and of the record of development we have made in the State:

"We are told that the Alabama Power Co. owned the site on which the Gorgas plant is located; that it owned coal mines from which fuel is now obtained for the operation of the Gorgas plant; and that there now exists an agreement in writing between the Federal Government and the Alabama Power Co. whereby the Alabama Power Co. obligated itself to purchase and the Government obligated itself to sell the Alabama Power Co. the Gorgas steam plant when it ceased to be useful to the Federal Government.

"I believe contracts between the Government and private enterprises or corporations are just as sacred as contracts between individuals. The State of Alabama has only recently gone into the courts in an effort to maintain the terms of a contract made in good faith between the State and a private corporation. If the Government will not carry out its contracts, how can we expect individuals and private corporations to carry out their contracts? * * *

"Opponents of the power company can see nothing good in its past, present, or future, forgetful of the tremendous benefits the State has derived from the development by the company of water powers that ran to waste since the beginning of time until the money of the company served to harness it for the use of the State and its people * * *."

In February 16, 1922, issue of the Birmingham News this editorial statement is made:

"In order to carry on the matter and complete it, President Martin made a clean-cut, business offer to complete the Wilson Dam without cost to the Government; with the initial installation of 240,000 horsepower electrical equipment, to furnish out of this 100,000 horsepower free to the Government for operation of the nitrate plant if the Government desires to operate it, or to furnish to the designated agent or lessee from the Government; to take out a license under the Government general water power bill, and the lease on the Muscle Shoals plant to be for 50 years instead of 100, as proposed by Ford; to pay $5,000,000 for the Gorgas steam plant and transmission lines; to furnish power free to operate the lock gates on the dam in aid of navigation, and to deliver over to the Government whenever national emergency exists the whole project—and to commence work at an early date. Moreover, if the Government should decide not to manufacture nitrates, then the 100,000 horsepower of current set aside for Government use will be purchased from the Government."

And the following was contained in the editorial of Sunday, February 5, 1922, of the Birmingham Age-Herald:

"The Henry Ford offer for Muscle Shoals, as submitted to Congress by Secretary Weeks, is undoubtedly a great thing for this section of the South.

"On the other hand, as a whole Mr. Ford is asking much from the Government and is extending out into the territory of the Alabama Power Co.

"The bid calls for his acquirement from the Government of the Gorgas steam plant, which was first built by the Alabama Power Co. and added to by the Government during the excitement of war. The Alabama Power Co. is now operating this plant and it seems to be absolutely necessary for the power company to have it to supply the current it has contracted for during low-water periods in the Coosa River.

"This plant is some 90 miles from Muscle Shoals. It is connected by a power line. But this plant is also connected with the Alabama Power Co.'s lines running throughout the State, and which supply the factories and the mines and all sorts of manufacturing enterprises in the State with electric power. Should the Government give this steam plant to Mr. Ford, the Alabama Power Co. would be seriously embarrassed, and naturally it would fight for what it has always considered its own.

"Mr. Ford's bid to the Government, which includes this Gorgas steam plant, is emphatic in that the Government was to accept his entire proposal or none of it.

"This will be a serious problem before Congress—to take away from an actual going concern, keeping the industries of this State in operation, its source of power, to include it more or less as a gift to a prospective concern which can not get in full operation for several years. In other words, can the Government afford, by an act of Congress, to more or less smash the Alabama Power Co. and the manufacturing interests of Alabama to humor Mr. Ford in his big Muscle Shoals proposition?

"As Mr. Ford's proposition reads, it would appear that he wants everything or nothing, and that he would deprive the Alabama Power Co. of its present main source of continued electric current—the Gorgas steam plant. This does not look fair to the writer. Congress should find means of adjusting the matter between the Ford interests and those controlling the Alabama Power Co., which has become one of the greatest developers of Alabama.

"It would strike the fair-minded man that Mr. Ford should be satisfied with the water-power development which the Government is to pay for that he may operate it on a small rental.

"The Gorgas plant was the work of the Alabama Power Co., built by it, with Government aid. The Alabama Power Co. has operated it all the time. It is a necessity with this company. Therefore, why should the Government dump it in, so to speak, as more or less of a gift to Mr. Ford, when the Detroit man recently said in a published interview that he was opposed to steam-power electric plants and wanted to have nothing to do with such?

"The Ford Muscle Shoals proposal by itself is undoubtedly a great one for this section of the country and for the interests of the Government; but there is a limit to that which the Government should turn over to him; and the Gorgas steam plant would seem in honesty and justice to be outside of that limit.

"Let Mr. Ford take over Muscle Shoals—we are all for it—but don't let us, in our eagerness to get Mr. Ford's money and industry down here, strangle the Alabama Power Co."

The Chamber of Commerce of Birmingham, the largest city in the district, on August 16, 1921, adopted the following resolution:

"Following the report of the committee appointed to look into the development of the Muscle Shoals project, which report was made by Mr. Thornton Estes, it was moved by Mr. Donald Comer and seconded by Mr. Murray Brown that the board of directors of the chamber of commerce respond to the appeal of the Tennessee River Improvement Association for cooperation in the work which it is doing in the interest of the completion of the dam or dams on the Tennessee River adjacent to the Muscle Shoals, for the creation of hydroelectric power and the manufacture of fertilizer, by undertaking through subscription to raise the amount requested; and that the president either continue the present committee or appoint another for that purpose.

"The range of the discussion included the proposal of Mr. Henry Ford made to the Secretary of War, and, while it seemed to be the best one available for the purposes herein recounted, it was the opinion of the members of the board of directors that the best offer should be accepted if others were made. It was also made clear in the discussion that the amount of money which the Chamber of Commerce of Birmingham will undertake to raise, $5,000, is for the purpose of helping the Tennessee River Improvement Association to defray the legitimate expenses of presenting to Congress and to Government officials all of the facts with respect to the completion of the dam and the utilization of its power for the benefit of the producing interests throughout the country, upon which use the appeal of the Tennessee River Improvement Association for funds was based. The motion prevailed."

The foregoing resolution was reaffirmed by the chamber of commerce at a meeting held early in March, 1922, as being its attitude toward this development.

The Birmingham News of February 18, 1922, contained the following editorial:

"The News stands to-day where it has always stood, a believer in the great things to come if Ford is given the shoals. The News has never ceased to give the preference to Ford in every particular. Even in the editorial of which Mr. Holland so bitterly complains, the News said that, despite the fact that the Alabama Power bid seemed very much better from a purely governmental financial standpoint, this paper still believed the acceptance of the Ford offer would bring to this whole section its greatest development and would open a vista of possibilities more glorious than even its most ardent propagandists had ever dreamed. The News said, too, in that editorial that no matter what the outcome was, one man deserved the credit for the development that was now definitely assured, and that that man was Henry Ford, whose vision had rescued the Muscle Shoals properties from the Federal junk pile to make them the center of the South's great future. * * *

"Frankly, the development of Muscle Shoals to its greatest possibilties means more to the Birmingham News than does Henry Ford, the Alabama Power Co., James B. Duke, or any other man or interest. The whole future of this section is wrapped up in this great development; and while the News believes its greatest possibilities lie in the magic hand of Henry Ford, this paper is always open to conviction, and whoever can achieve the greatest things at Muscle Shoals, that man or that interest is entitled to the properties, provided he can make the Government a reasonably good offer for them and can and will properly guarantee that he will carry out in good faith the promises he has made. * * *

"The development of Muscle Shoals is the greatest thing in the immediate future for this State, the South, and perhaps the whole country.

"* * * Muscle Shoals is bigger than the Alabama Power Co., it is bigger than Henry Ford. Its development either by Henry Ford, the United States Government, or the Alabama Power Co. is now definitely assured, due to the vision of Henry Ford, and the News rejoices in that fact. And while the News wants Ford to handle the development and believes sincerely that that would be the best thing for the country, the News is willing to abide by the judgment of Congress, which, after careful study of the whole situation, will make the award to that man or interest who will best safeguard the rights of the United States Government and its people and who promises to bring the greatest blessings to mankind from the development that is certain to ensue, no matter who gets the properties."

The Carbon Hill Journal, Carbon Hill, Ala., of March 9, 1922, contained the following editorial:

"Bibb Graves, who thinks he is a candidate for governor, has sent the Journal a copy of a Montgomery paper containing the address he delivered before the mass meeting in that city last week. We refer to it as an 'address' through courtesy. As a matter of fact it was a vicious, narrow-minded, unfair, and scurrilous attack on one of the greatest industries in the State—the Alabama Power Co. If Bibb Graves sees fit to indorse the Ford bid for Muscle Shoals, that is his right, and no fair-minded person would think of denying him this privilege. But just how he expects to promote the Ford interests, and incidentally his own, by such an unwarranted attack on the power company is not quite clear on the surface of things. The Ford bid will have to stand or fall on its merits, and no amount of abuse of another bidder by a cheap, office-seeking politician courting popular favor is in the least going to enhance Ford's chances of securing Muscle Shoals.

"Bibb Graves may be a smart man, although his Montgomery address would indicate otherwise; he has some things to learn, and among them is the fact that he can not build himself up by tearing others down. Any man guilty of employing such contemptible methods to advance his own selfish interests is utterly unfit to fill the exalted office he seeks to obtain. As governor he would be far from a credit to the State."

Respectfully submitted.

ALABAMA POWER CO.
By T. W. MARTIN, *President*.

(Thereupon the committee went into executive session, after which it adjourned until Friday, March 10, 1922, at 10.30 a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Friday, March 10, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF COL. J. W. JOYES, BUREAU OF ORDNANCE, UNITED STATES ARMY.

The CHAIRMAN. Gentlemen, Colonel Joyes, of the War Department, is here this morning, and I think the papers show that the colonel was the gentleman who on behalf of the Government entered into negotiations with the Alabama Power Co. at the beginning of the expansion of the nitrate plant at Muscle Shoals.

Colonel, can you explain to the committee, in your own way, just exactly what the dealings were which you had with the Alabama Power Co. along in 1917 or 1918? Did you begin negotiations with that company?

Colonel JOYES. Practically the first I ever heard of the Alabama Power Co., except in reading of some of the previous hearings before committees on other matters—practically the first I heard of them was when we received from the American Cyanamid Co. the first proposal to erect a nitrate plant for the Government, at its request, and that proposal, after setting forth a description of the plant to be put up and the terms, discussed the question of how to provide power.

It started out with the premise that, if the first half production of the plant were to be achieved within the promised time of six months from breaking ground, it would be impossible to provide power in a plant started and built ab initio in that time. The power requirement, as you all know, for the cyanamid process is very great, and a power plant takes time to build. So the proposal of the American Cyanamid Co. said that the only way they could see to be sure of a supply of power in time for the operation of the first half production of the nitrate plant within six months from date of breaking ground would be to go to an established system where a supply of power could be had, and then to go ahead and build the power plant for the remainder of the power, which it was hoped could be done by the time that the remainder of the plant production was ready. They suggested in that proposal that an arrangement might be made with the Alabama Power Co., and I think said that the matter had been opened with the Alabama Power Co., and that company had been told that they might expect to receive an inquiry from the Government.

Now, it was at that time represented in the American Cyanamid Co.'s proposal that the Alabama Power Co., unquestionably, did not have a sufficient supply of uncontracted power or unsold power throughout the year to meet the demands for the first half production of the nitrate plant, but that at certain seasons of the year, and especially the season when the first half production was expected to begin, there would be available about the 30,000 kilowatts that was desired out of the run of the river. I am speaking now of the Coosa River and the Alabama Power Co. system. In other words, that at the time when we needed that first supply of power it would be available over and above contract requirements, at least over and above the binding contract requirements that could not be set aside.

The CHAIRMAN. When was this?

Colonel JOYCE. This was in the fall of 1917, sir. I forgot that. The first proposal that we received from the American Cyanamid Co. was in October, 1917.

The CHAIRMAN. Now, let me ask you this question: What were you doing at that time?

Colonel JOYCE. I thought that was of record. I was at that time chief of the nitrates division of the Ordnance Office, at that time called "Division T" for brevity. We prefered not to give it any name. That was the division of the Ordnance Office which was charged with the conduct of all matters relating to nitrogen fixation under the Ordnance Department.

The CHAIRMAN. Were you stationed at Muscle Shoals?

Colonel JOYCE. No, sir; I was stationed at Washington.

The CHAIRMAN. And these letters came to you at Washington?

Colonel JOYCE. Yes, sir.

The CHAIRMAN. When did you go down to Muscle Shoals, or did you go down there?

Colonel JOYES. The first trip I made down there must have been about, probably, August or thereabouts.

The CHAIRMAN. August of 1917?

Colonel JOYES. July or August of 1917: yes, sir. I went down there at that time, as I went to a number of other places, looking out for a site for the first installation to be made under the $20,000,000 appropriation for nitrate supply, section 124 of the national defense act.

Now, coming back to Mr. Washburn's (the Cyanamid Co.'s) proposal, after showing that the Alabama Power Co. would have available at the time we wanted it a supply of power to meet our needs but could not continue to supply that throughout the year without further construction, he went on to say that he thought the Alabama Power Co. already contemplated an extension of their station but could not make it at the present time on account of financial conditions, and that possibly we might arrive at some working arrangement with them.

The CHAIRMAN. What position was Mr. Washburn in at that time?

Colonel JOYES. President of the American Cyanamid Co.

The CHAIRMAN. Was he connected with the Alabama Power Co. at all?

Colonel JOYES. I had no reason whatever to believe that he was, and I have since looked into the matter considerably and heard a great deal of investigation in the matter, and I am satisfied he was not, except possibly as a stockholder. He had been previously connected with it as an official.

The CHAIRMAN. But not at the time that he spoke to you?

Colonel JOYES. No, sir; I do not know that of knowledge, you understand, but I am convinced that he was not.

The CHAIRMAN. But he, at least, suggested to you that it might be possible to make a working arrangement with the Alabama Power Co.?

Colonel JOYES. Yes, sir; and then as we commenced negotiations with Mr. Washburn he submitted in succession several different offers which were changed to meet or to come a little nearer to meeting the ideas of the officers of the Ordnance Department and of the War Department, and along about, I think, the 5th or 6th or 7th of November, we received a communication from the Alabama Power Co. making a statement of their power situation, premised upon this demand which, according to my remembrance at this time, was communicated to them by Mr. Washburn.

The CHAIRMAN. You say "we received"; whom do you mean by "we"?

Colonel JOYES. I think the letter was addressed to the Division T, Ordnance Department, which was my division. It came direct to me, in other words. I am quite sure of that, sir. That letter is in the record either of this committee or some other, and probably several, and it will show by its address, I believe, that probably Captain Gaillard can tell you for sure.

Captain GAILLARD. No, sir; I am under the impression it was addressed to you but I am not sure.

Colonel JOYES. I have not it with me, but it is in the record in several places.

Mr. MCKENZIE. Is it not true, Colonel, that a number of those communications were addressed to the Chief of Ordnance of the United States Army?

Colonel JOYES. They might have been.

Mr. MCKENZIE. And not to any particular officer?

Colonel JOYES. Some of those offers that came along about that time were addressed in one way and some in another.

Mr. MCKENZIE. That is true.

Colonel JOYES. Sometimes they would be addressed to the Chief of Ordnance and then in parenthesis, or in the line below, "Division T," or "Division so-and-so." There was nothing in that, I believe, to have any particular significance, Mr. Kahn. I mean to say that the form of address and just where it came did not affect any of the negotiations in any way.

The CHAIRMAN. At any rate the letter reached you as the head of that Division T?

Colonel JOYES. It came direct to me, at any rate.

The CHAIRMAN. Do you know where that letter is at the present time.

Colonel JOYES. Oh, yes; it is in the Ordnance Office, in the correspondence files.

The CHAIRMAN. Will you kindly put it in the hearings of this committee at this place?

Colonel JOYES. Very good, sir.

The CHAIRMAN. Now, continue from that point, if you please.

Colonel JOYES. As I said, we had several different successive proposals from the American Cyanamid Co., and they were considered at conferences in the office of the Chief of Ordnance, mainly, running up to the evening of November 13th when the final decision was made, around about midnight, a little before or a little after, and then we started work at once.

Mr. Washburn took the train the next day to New York, with an understanding that as soon as we could wire him that the agreement reached in the office of the Chief of Ordnance had the approval of the War Industries Board, he would get on the train immediately with some of his engineers and people and go down to Muscle Shoals, and that I would meet him there. So that within two or three days or so after that conference I started for Muscle Shoals, and I believe at that time there was no communication of any consequence sent to the Alabama Power Co. I think we left that until we could decide upon the location definitely and get the nitrate plant started so that it could move along; but I may be wrong about that. We will have the files searched and if there

was any communicataion sent to the Alabama Power Co. in that time in reply to their proposal of about November 5, we will have it put in the record along with that.

The CHAIRMAN. There is a letter of November 6, 1917, addressed to you, and that is in the hearings, and I will have the clerk read it and see if you recognize it. It is the letter that Mr. Dent offered the other day when he was before the committee.

(The clerk read the letter referred to as follows:)

NOVEMBER 6, 1917.

Col. J. W. JOYES,
Division T., Ordnance Department, Washington, D. C.

DEAR SIR: In a conference to-day Mr. Frank S. Washburn, president of the American Cyanamid Co., asked the Alabama Power Co. to formulate a definite proposal as to what it was prepared to do in the way of supplying power to the proposed new nitrate works at Muscle Shoals, Ala., on the Tennessee River.

Until such time as there shall have been definitely determined the details of the Government's requirements we are only able to formulate a proposal along general lines, and one which may be considerably modified as to details in carrying it out.

The financing of such an installation at this time would not be warranted by the present needs of the Power Co., but it is prepared to cooperate in every possible way with the Government in the undertaking which you have in view.

We estimate that the necessary additions to our Warrior River steam plant, and the transmission lines and substation necessary for delivering power at Muscle Shoals, will cost approximately $2,250,000. If the Government will finance the undertaking and assist in deliveries the power company will be prepared to install with maximum urgency the necessary steam plant, substations and transmission lines. The company will supply 30,000 kilowatts delivered to the Muscle Shoals substation at a combined energy and demand charge of 7 mills (0.007) per kilowatt hour.

The Power Co. will undertake to set aside 3 mills (0.003) per kilowatt hour for all energy supplied under this proposal, until the Government has been reimbursed for all sums advanced to the company in this connection.

We understand the power requirements of the proposed nitrate plant, so far as this company is now concerned, to be about 30,000 kilowatts, which must be in readiness in about six months. The company can be in readiness with this amount of power within the time required, and with the completion of the extension above referred to can continue to furnish this amount of power regularly.

The company has contracts with the Gulf States Steel Co., Tennessee Coal & Iron Co., many coal mines, the Southern Manganese Co., and various graphite products companies, all of which are directly connected with the proper conduct of the war, whose continued operations will not be affected under the plan proposed herein.

The Alabama Power Co. has available considerable apparatus which ordinarily takes a long period to obtain and which might be used in connection with the proposed work. It also has an excellent construction and operating organization with a long experience with local conditions.

Holding ourselves at your orders for further treatment of the subject, we are,

Very respectfully, yours,

ALABAMA POWER CO.,
JAMES MITCHELL, *President.*

The CHAIRMAN. Do you remember that letter?

Colonel JOYES. That is the letter to which I had reference and shows I was essentially right in saying it was addressed to my division.

The CHAIRMAN. Yes.

Colonel JOYES. It came to me at any rate.

The CHAIRMAN. It is dated November 6 instead of November 5.

Colonel JOYES. Well, I had it November 5 or 6 or 7. There were a good many at that time and I get them mixed.

The CHAIRMAN. After you received that letter, what did you proceed to do?

Colonel JOYES. As I said, I do not remember whether we made a written reply to that letter at the time or not, and I can not remember whether I saw

any of the Alabama Power Co. officials prior to about the end of November or not, but we will have the records looked up to see if there was any reply. There was nothing, at any rate, of any consequence, nothing significant or definite.

I went to Muscle Shoals along about the middle of November and stayed down there—it made about a 10-day trip and I got back in the latter days of November and immediately took up the going over and examination of the tentative draft of contract with the Cyanamid Co. for the nitrate plant, and other things depending upon that, to get that job started and clear the way for that; and then I got in touch with the Alabama Power Co. people, and they had their representatives come to Washington.

The CHAIRMAN. When did you complete the work with the Cyanamid people?

Colonel JOYES. We signed the contract, actually, on the 4th of December, 1917, if I am not mistaken. I think that is correct. I am pretty sure of it.

The CHAIRMAN. I think their testimony is that they had a contract which the Government entered into with them about the 1st of December, 1917.

Colonel JOYES. Well, I think that is wrong, sir. My remembrance is fairly clear on that, that it was signed actually on the 4th of December. Several things seem to fix that pretty definitely in my mind, and it was dated back to the 16th or 17th of November, in order to have it start from the very inception of the work.

As soon as we got clear, along about the 1st of December, perhaps a day or two before or a day or two afterwards, the Alabama Power Co. officials came to my office in Washington by invitation. Mr James Mitchell, the president, and I think Mr. Martin, then vice president and counsel, and possibly others. Mr. Walmsley, for example, I think he was general manager or something like that at the time. I have those people particularly in mind and also Mr. Thurlow, chief engineer, and the reason I can not be sure who was there at the very first conference is because they were in there at different times in other conferences of about that period, sometimes two, sometimes another two, and sometimes all four of them. We discussed the different ways in which we could arrange to put the Alabama Power Co. in a position to give us the power we had to have.

The first proposition, as stated in their letter, was the Government financing, naturally, in the most obvious manner by loan or advance of money, and we could not see any earthly way in which we could do that.

The CHAIRMAN. Why not?

Colonel JOYES. Although the principle was recognized as being sound and proper, we saw no way whatever in which we could make a loan to the company at that time, or an advance.

The CHAIRMAN. Why not?

Colonel JOYES. Because we could not find any legal authority for it at all. We looked over the situation pretty hard and, of course, in peace times we would not have looked very hard, because we know we would not think of it; but in war times we looked to see if there was any way that we could possibly do it, and there was not the slightest chance. The War Finance Corporation and War Credits Board had been established about that time, and we did not know just how they were going to function. We thought, possibly, from their names, they might help out in a situation like that, and I sent an officer from my office to accompany some of the Alabama Power Co. officials to the office of the War Finance Corporation and War Credits Board to see if anything could be arranged there by the company or by us, but nothing came of it at all.

There was another thing that was thought of, and that was to make a firm contract for a certain definite amount of power, and make an advance payment upon it, but we had had numerous decisions that had been made in peace times, of course, and there was nothing to upset them, to the effect you could not make an advance payment on a contract for delivery of commodities, and it was even more specific that you could not do it for power from any of the regular appropriations. So we did not know what to do there. Later on, there were ways found, decisions and opinions given, that enabled such transactions to be carried out, but that was way along in 1918 that that was done. There were a number of opinions given by the legal officers of the War Department and the Ordnance Department which kept us away from doing either of the two things, either loaning or making an advance payment, either one.

The CHAIRMAN. What do you mean by "legal officers?"

Colonel JOYES (continuing). It was very embarrassing and later on we did it sometimes in defiance of the opinions because we had to.

The CHAIRMAN. What do you mean by the "legal officers of the department"—do you mean the Judge Advocate General?

Colonel JOYES. Yes, the Judge Advocate General had rendered some opinions. Also, with the development of the great business of the Ordnance Department, it was found absolutely indispensable to establish a corps of lawyers in the Ordnance Department to give prompt and ready advice as to the daily transactions coming up in the active divisions of the office, and some very eminent lawyers were attached to the department in that capacity.

The CHAIRMAN. Do you remember who they were?

Colonel JOYES. Oh, there were a great many of them, sir. I remember Mr. Ralph Crews for one. His name stands out, a very prominent man.

The CHAIRMAN. Where did he come from? Where is his office?

Colonel JOYES. I could not say, sir.

The CHAIRMAN. Do you know where he was from at that time?

Colonel JOYES. No, sir; I do not. Possibly, Major Burns might know.

Major BURNS. He is from New York City.

The CHAIRMAN. New York City?

Major BURNS. Yes, sir.

The CHAIRMAN. Do you know where his office is at the present time, Major?

Major BURNS. I can get that for you, sir. I do not recall it right now.

The CHAIRMAN. Can you let me know just exactly where his office is?

Major BURNS. Yes, sir.

Colonel JOYES. Any of those officers can be easily found, if you have any communicatins to address to them, or if you want to build up the record by having their present location or previous location. ,I think we can undertake to furnish that.

The CHAIRMAN. All I want is the truth about the matter; that is all.

Colonel JOYES. Yes, sir. Then, another name that comes to me is that of Col. William Williams, who was one of the negotiators and signed some of our contracts because he was in the procurement division in 1918.

The CHAIRMAN. He has gone to Japan.

Coloney JOYES. Yes, sir; temporarily, I believe. There was also—well, I had in my division a couple of men, one, Captain Noble, who is now dead—he was a New York lawyer, a rather young man but a very good lawyer, and I had a still younger man later on named Nightingale.

The CHAIRMAN. Was he from New York also?

Colonel JOYES. I think so.

Major BURNS. I think he is from California.

Colonel JOYES. I do not know. He went to California after a while, but I think he came from the East.

The CHAIRMAN. What part of California?

Colonel JOYES. I have not the slightest idea.

The CHAIRMAN. Los Angeles, probably.

Colonel JOYES. I do not know. Then there was an officer named Alexander Perry Osborn, a New York lawyer, who belongs to a firm of lawyers there. He was a rather young man. Those are all the names that come to me at the moment, but there were a number of others. Mr. Crews, or Colonel Crews, I think, was depended upon for the more important and authoritative advice.

The CHAIRMAN. How old were these lawyers?

Colonel JOYES. As I said, several of them I have mentioned were young. Colonel Williams was a much older man. I imagine in 1918 he was between 55 and 60, certainly.

PARTIAL LIST OF LAWYERS IN ORDNANCE DEPARTMENT 1917–18.

Crews, Ralph, lieutenant colonel: Age, 42; legal residence, Riverside, Ill.; member of law firm of Adams, Crews, Bobbs & Westford; income therefrom approximatetly $20,000 per annum; now member of law firm of Shearman & Sterling, 35 Wall Street, New York City; commissioned June 28, 1918.

McKeehan, Charles L., lieutenant colonel: Age, 42; legal residence, Philadelphia, Pa.; B. A. and LL. B., University of Pennsylvania; law lecturer, University of Pennsylvania; present address, 315 South Twenty-first Street, Philadelphia, Pa.; commissioned December 26, 1917.

Griggs, Maitland F., lieutenant colonel: Age, 46; legal residence, Irvington, N. Y.; B. A and LL. B., Yale; practicing attorney, New York City; present address, 527 Fifth Avenue, New York City; commissioned September 20, 1917.

Osborn, Alexander Perry, lieutenant colonel: Age, 33; legal residence, Garrison, N. Y.; A. B., Princeton, 1905, and LL. B. Harvard, 1909; assigned to active duty June 28, 1917, Washington, D. C.; to France February 20, 1918; returned December 12, 1918; demobilized December 31, 1918; resumed practice of law with Beckman, Menken & Griscom, 52 Williams Street, New York.

Noble, Raymond Hull, captain: Age, 31; legal residence, Brooklyn, N. Y.; LL. B. and LL. M., New York University, 1907 and 1909; practicing attorney; commissioned January 7, 1918. (Now deceased.)

Nightingale, Lionel G., major: Age, 37; legal residence, Poughkeepsie, N. Y.; mechanical engineer and bachelor of arts, Cornell, 1909 and 1915; graduate degree, juris doctor; present address, 535 West One hundred and forty-second Street, New York City; commissioned June 19, 1918.

Delafield, John Ross, colonel: Age, 44; legal residence, New York City; A. M., LL. B., Princeton, 1896; practicing attorney, New York City; present address, 27 Cedar Street, New York City.

Galleher, Parke A., major: Age, 30; legal residence, Washington, D. C.; LL. B., George Washington University; practicing attorney, Washington, D. C.; present address, National Metropolitan Bank Building, Washington, D. C.; commissioned September 17, 1917.

Low, Benjamin R. C., major: Age, 38; legal residence, Brooklyn, N. Y.; LL. B., Harvard, 1905; member of firm Low, Miller & Low, attorneys, 30 Broad Street, New York City; present address, 58 Remsen Street, Brooklyn, N. Y.; commissioned July 23, 1917.

Pinanski, Abraham E., captain: Age, 30; legal residence, Boston, Mass.; LL. B., Harvard, 1910; assistant to general attorney, Boston Elevated Railway Co.; member of law firm Pinanski & Morris 101 Milk Street, Boston, Mass.; present address, 949 Blue Hill Avenue, Dorchester, Mass.; commissioned August 23, 1917.

Williams, William, lieutenant colonel: Age, 55; legal residence, New York City; LL. B., Harvard, M. A., Yale and Columbia; practicing attorney; present address, 1 West Fifty-fourth Street, New York City; commissioned February 12, 1918.

Hawkins, Richard H., lieutenant colonel: Age, 39; legal residence, Pittsburgh, Pa.; Ph. B., Yale, LL. B., University of Pittsburgh; law lecturer, University of Pittsburgh; practicing attorney, Pittsburgh; present address, 1405 Squirrel Hill Avenue, Pittsburgh, Pa.; commissioned February 8, 1918.

Fairchild, Arthur W., major: Age, 41; legal residence, Milwaukee, Wis.; B. L. and LL. B., University of Wisconsin; practicing attorney; present address, 474 Kenilworth Place, Milwaukee, Wis.; commissioned October 15, 1917.

Holcombe, Amasa M., major: Age, 35; legal residence, Washington, D. C.; M. E., Massachusetts Tech., 1904; practicing attorney (patents); present address, 3305 Eighteenth Street, Washington, D. C.; commissioned May 26, 1917.

Hamilton, E. A., major: Age, 28; legal residence, New York City; LL. B., Cornell, 1913; practicing attorney, New York City; present address, 128 West Eleventh Street, New York City; commissioned June 12, 1917.

Dodge, Parker, major: Age, 34; legal residence, Washington, D. C.; S. B. in M. E. Massachusetts Tech. (LL. B.), 1907; practicing attorney (patent), Washington, D. C.; present address, 724 Ninth Street NW., Washington, D. C.; commissioned August 15, 1917.

The CHAIRMAN. Were these other young men of draft age?

Colonel JOYES. Possibly a few, sir. Colonel Crews was a man, I should say, of about 40 or 45.

When we got these negotiations opened up in December with the Alabama Power Co. we found it difficult to get at a working arrangement, and we saw that there was going to be a considerable delay in getting an agreement. The company had mortgages, bonded indebtedness, and it had a lot of firm contracts for power, taking up a good deal of its production, and it had contracts for secondary power also, and those were rather annoying in the way they interfered with anything like a commandeering order to take away the power; not that it could not be taken, but what troubled us was that if we took the power by commandeering we were going to be interfering with so many of the industries that the War Industries Board was telling us must be interfered with in no way, shape, or manner. So it was very difficult, and then there was the question of what damages, etc., the company could recover, and the question of how the United States could be protected in whatever it might do. The probable cost and complication due to commandeering appeared prohibitive.

The principle had been established already of building extensions to plants where the Government required a delivery from the plants of more than their previous capacity could give, and there were a number of precedents for that—extensions and additions to machine shops, foundries, powder factories, and everything like that. It was the only way we could have gotten along at all and gotten anything. So that appeared to be the most obvious solution of it—to build an addition to th plant, so that it could deliver more than it was capable of before and give us what we required; but how to get that in and have the Government's interest protected and the Alabama Power Co.'s interest protected, as they necessarily demanded, made a very complicated proposition, and I could not see my way through it. I did not have a very big staff at that time of people I wanted to turn it over to, and I said, "We have got to do the thing anyhow and we will find a way to do it after we have got it started."

So I drew them a purchase order, simply saying "Deliver us so much power by such and such a time, or thereabouts," and to enable them to do this I issued them another order, "Put in an extension to your plant for which the United States will make some arrangement to finance," or words to that effect, and another purchase order, "Build a transmission line from your system up to the Muscle Shoals nitrate plant; start at it right away and we will settle the terms later on." Those orders were safe, as they were capable of later treatment as commandeering orders. They promptly said they would work under such an agreement as that, and they started in.

The CHAIRMAN. That was an agreement dated December 7, 1917, and is in the hearings.

Colonel JOYES. Yes; that is right.

The CHAIRMAN. It is addressed to you and says:

WASHINGTON, D. C., *December 7, 1917.*

Col. J. W. JOYES,
Colonel, Ordnance Department, United States Army,
Washington, D. C.

SIR: This company acknowledges receipt of your purchase order (Executive order No. 154) of date December 7, 1917, for the construction of a transmission line from our steam plant on the Black Warrior River to the site of the proposed ammonium nitrate plant at Sheffield, Ala.

In accordance with your instructions we are proceeding to book this order as a definite order on behalf of the Ordnance Department, United States Army, and will proceed as speedily as possible toward carrying out your instructions.

Yours, very truly,

ALABAMA POWER CO.,
By THOS. W. MARTIN,
Vice President and General Counsel.

Do you remember that order?

Colonel JOYES. Yes, sir.

The CHAIRMAN. Is that the one you have reference to?

Colonel JOYES. That is an acknowledgment of the order I had reference to.

The CHAIRMAN. Yes.

Colonel JOYES. As I say, I wrote three orders—one for the supply of the power, another for the addition to the plant, and another for the building of the transmission line. They were Nos. 154, 155, and 156. I think they were all dated December 7. They were in part superseded by later orders, somewhat modifying the requirements, December 21 and January 8.

The CHAIRMAN. There are three orders here, I believe, dated December 7. Here is one, order 156; also orders 154 and 155. They are all in the record.

EXECUTIVE ORDER NO. 154.

DECEMBER 7, 1917.

ALABAMA POWER CO.,
Birmingham, Ala.:

By authority of the Chief of Ordnance, you are hereby given an order to construct, on lands owned by you or rights of way under your control, from your steam-power plant on the Black Warrior River to the site of the proposed ammonium-nitrate plant of the Air Nitrates Corporation at Sheffield, Ala., for the present known as the United States Nitrate Plant No. 2, a transmission line,

for the purpose of and of proper capacity for transmitting electric current of 3-phase, 60-cycle, and about 110,000 volts. This line to be built as economically as possible, being for the temporary use of the United States in transmission of power during the period of the present war, or thereabouts. The line to be the property of the United States, and suitable arrangements to be made, as already tentatively agreed upon, to cover the payment of actual cost, plus a percentage thereof, to cover use of the Alabama Power Co.'s lands, right of way, construction forces, and other facilities, etc., and profit. All these conditions to be embodied in a future contract.

Priority, class A–1, has been requested from the War Industries Board for the manufacture of this material (copy of which is inclosed), so that delivery may be made at the earliest possible date.

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and promptly acknowledge receipt thereof.

Very truly yours,

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

WASHINGTON, D. C., *December 7, 1917.*

Col. J. W. JOYES,
Ordnance Department, United States Army.

SIR: This company acknowledges the receipt of your purchase order (Executive Order No. 154) of date December 7, 1917, for the construction of a transmission line from our steam-power plant on the Black Warrior River to the site of the proposed ammonium-nitrate plant at Sheffield, Ala.

In accordance with your instructions, we are proceeding to book this order as a definite order on behalf of the Ordnance Department, United States Army, and will proceed as speedily as possible toward carrying out your instructions.

Yours very truly,

ALABAMA POWER CO.,
By THOS. W. MARTIN,
Vice President and General Counsel.

DECEMBER 21, 1917.

ALABAMA POWER CO.,
Birmingham, Ala.:

By authority of the Chief of Ordnance, you are hereby directed to make the following modifications of our order, XOT–154, of December 7, 1917:

In addition to the transmission line proper, ordered in XOT–154, as originally drawn, that order will cover also suitable transformer station for step-up to 110,000 volts at the Warrior plant end, and suitable transformer station for step-down from line voltage to 12,000 volts, or thereabouts, as to be more particularly specified by inspector, and both these stations to be complete outdoor stations with proper oil switches, etc., details to be approved by inspector.

All facilities contemplated will be of ample capacity to carry 35,000 kilowatts continuously without injury and without excessive energy loss and voltage drop. At present single circuit of 250,000 circular mils hard drawn stranded copper, regarded as most suitable, this to be definitely decided between you and the undersigned.

It is to be understood that every effort is to be made to have this entire line with the two substations in readiness for use by June 1, 1918, and that whatever temporary arrangements are necessary for taking the current which you will then have to take from your own lines, instead of from your additional generating capacity which we expect to install, must be provided in some manner satisfactory to this office.

In addition to the payments mentioned in the original order for actual cost, the percentage will be 6 per cent.

Nothing else on order to be changed.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, January 8, 1918.

ALABAMA POWER CO.,
Birmingham, Ala.:

By direction of the Chief of Ordnance, purchase order XOT–155 and letter (T–8277) of December 14, 1917, are hereby canceled, and you are hereby given an order to purchase and install for the United States as a temporary addition to the steam power producing facilities at your Warrior River plant in Alabama. and to enable you to supply to the United States at Sheffield, Ala., the supply of power contemplated by a separate purchase order, XOT–156, Model No. 1, of even date herewith, as follows:

1. Thirty thousand kilowatt turbo-generator unit, with suitable accessories, as condensers, switchboards, battery of boilers, etc., directly necessary to its service, in addition to what you now have installed, or should properly put in for the portion of your plant now existing.

Also to install the foregoing upon your existing land and foundations, etc., and to erect thereover a temporary building for the protection of such apparatus.

Provided, that all of the foregoing work is to be performed by you, subject to the approval of the undersigned and on the basis of reimbursement of actual cost plus a construction fee, in consideration of which you will allow without special rental or similar charge therefor the use of your land, foundations, and other property as needed, the actual amount or percentage of such construction fee to be embodied in a future contract; said contract to be mutually agreed to by your company and this office, or in the event of disagreement, to be referred to a competent and authorized board for settlement.

2. Purchase order on: Alabama Power Co.

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and sign below the acknowledgment and acceptance on the part of your company.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

JANUARY 8, 1918.

We accept the above order.

ALABAMA POWER CO.,
By JAMES MITCHELL,
President.
THOS. W. MARTIN,
Vice President and General Counsel.

JANUARY 8, 1918.

ALABAMA POWER CO.,
Birmingham, Ala.:

By direction of the Chief of Ordnance, purchase order XOT–156 is hereby canceled and you are given this order to furnish certain electric power, to be specified hereafter, to the United States at Sheffield, Ala., viz:

Upon completion of the transmission line from your Warrior plant to Sheffield, which line you are to construct under my order XOT–154, you will furnish from any resources of your system such part of 10,000 kilowatts as the United States may require; and in excess of that quantity, if available, as the United States may require.

Also, upon completion of the additions to your Warrior steam plant to be built by you for the United States, as covered by my order XOT–156, Mod. 2, which completion is expected to be about August 1, 1918, you will furnish from said addition such part of 30,000 kilowatts as the United States may require, and in excess of that quantity if available from your system as the United States may require.

The rates for power and other terms hereunder to be embodied in a future contract, said contract to be mutually agreed to by your company and this office, or in the event of disagreement to be referred to a competent and authorized board for settlement.

Although this writing is in letter form, please book it as a definite order on behalf of the Ordnance Department, United States Army, by the undersigned, and sign below the acknowledgment and acceptance on the part of your company.

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

JANUARY 8, 1918.

We accept the above order.

ALABAMA POWER CO.,
By JAMES MITCHELL,
President.
THOS. W. MARTIN,
Vice President and General Counsel.

The CHAIRMAN. The foregoing are the orders and acceptances under which the work proceeded with the exception that on February 28, 1918, these orders were given the status of an agency contract to facilitate the fiscal arrangements.

Colonel JOYES. So we got it started. They wired right down to their people and got them started on the acquisition of the necessary right of way for the transmission line and began to work on the addition to the power plant, etc.

The CHAIRMAN. These letters were all issued here in Washington?

Colonel JOYES. Yes, sir.

The CHAIRMAN. And this transaction occurred at the Capital, here in Washington?

Colonel JOYES. In the city of Washington; yes, sir. In my office, which at that time was up on G Street, and these letters were put in my regular file of purchase orders, and I am quite positive that they were written and actually signed on the day indicated by the date upon them. I remember that pretty clearly.

The CHAIRMAN. December 7, I think.

Colonel JOYES. December 7, 1917. There were later some modifications as to the capacity of the apparatus to be put in, etc.; copies have been submitted (above) to make the record correct. The reason for writing the purchase order there was so that whatever payments we might have to make or anything would be based upon a writing. A good many of the war orders were placed by telephone or telegraph with no word of writing at all, but we tried to have something in writing, at any rate, and with a purchase order, especially when it is accepted, we had something to indicate a basis of partial agreement, and that put it in shape where we would get the work done, and if we came to a satisfactory agreement, all right, and if we did not, we could go up to somebody that had the ultimate power and tell them to decide what they would do for payment arrangements; presumably, the War Industries Board or some special board, would ultimately have passed upon it.

We then took occasion to try to work out a proper agreement. I had a great many things to do, but I carried on, nevertheless, a good many negotiations in Washington in the early period; that is, December, January, February, and along in there until I found I could not do it any longer. We were not getting to a final agreement, and I turned it over to other people in my office to take it up with the Alabama Power Co. people. We had a great difficulty there as to speed of negotiation because the Alabama Power Co. have offices in New York and their main business in Alabama. Some of their officials were at one place and some in the other, habitually, and we were in Washington, and all of us were busy.

The CHAIRMAN. The war was on at this time?

Colonel JOYES. Yes, sir; so that both in my organization and in theirs, it came to a point where a good deal of the threshing out of the details and framing up of the copy, which was hoped might be the final shape, was left to subordinates, and we let it go along for a while in that way and a draft would come up and sometimes I could not pass it and sometimes Mr. Mitchell could not pass it, and so it went on. After a while, pretty well along——

The CHAIRMAN. Why could not you pass it?

Colonel JOYES. Oh, well——

The CHAIRMAN. Or why could not Mr. Mitchell pass it?

Colonel JOYES. Some of the propositions did not look good to me. They looked not favorable, not safe, or otherwise unsatisfactory.

The CHAIRMAN. To the Government?

Colonel JOYES. Yes, sir; I was working for the Government, of course.

In the summer of 1918, I got very impatient about the progress of the contract and I think the power company did, too. We wanted to see something settled, both of us, and so we brought the negotiations right up to Washington where we could get at them a little closer, and we finally arrived at a contract form that we thought was going to go through all right and going to be satisfactory. At that time there had been a reorganization of the Ordnance Office, whereby I had no longer any authority to sign a contract, and all contracts were required to go to the procurement division for signature, and to go through a regular, uniform process of approvals. So I took ths contract over to the procurement division, to general MacRoberts, who was at the head of it, along in the summer of 1918, and told him the situation, and he said, in effect, "I will refer you to Colonel Williams, who will be appointed to take care of this situation and carry it to a conclusion." Colonel Williams looked the contract over and he said, "This is not exactly in the form we write our contracts. I can see that right away, and we will want to examine it very critically, anyhow, and if I chop it all to pieces and start fresh I will get it in our regular form and I can more carefully examine it and see that it fulfills all requirements." So he started to chop it to pieces and start all over again, but he preserved the essence of the contract and worked pretty expeditiously. We all sat with him. I was present at all the important conferences and took a leading part. Nothing was done that I did not concur in, and the contract was brought to completion and finally signed on about November 7, 1918.

The CHAIRMAN. Do you remember whether that contract had article 22 in it? I think that is the number of the article.

Colonel JOYES. I do not remember the articles by number. I know it had at least 22 in it, sir.

The CHAIRMAN. "Article 22: Sale to or purchase by contractor."

Colonel JOYES. I remember that, sir.

The CHAIRMAN. Will you state to the committee as clearly as you can what that section is.

Colonel JOYES. You mean an analysis of the provisions of the contract?

The CHAIRMAN. Yes.

Colonel JOYES. I have an analysis of that here and I intend to change nothing whatever from the language of the contract but to put it in shape where the different alternatives are more clearly brought forth. I can hand that right over to you and there are several other copies here, if the mmebers would like to see them.

(The analysis referred to is as follows:)

Contract T–69—Alabama Power Co. and the United States.

ANALYSIS OF SEVERAL ALTERNATIVE PROVISIONS FOR DISPOSAL.

Time or conditions.	Provisions for disposition.	Consideration, etc.
1. After 3 years after war end.....	United States has option to demand that contractor purchase Warrior extension and Warrior substation.	At arbitration value. (Excess or deficiency of acc. fund to be paid by United States or contractor, respectively.)
2. If and when acc. fund equals or is greater than actual total cost.	Contractor may demand that United States convey title in Warrior extension and Warrior substation.	At total actual cost. (Excess acc. fund to be paid back to contractor.)
3. At any time.....	Contractor may demand that United States convey title. (Warrior extension and Warrior substation.)	At total actual cost. (Contractor paying any excess necessary and acc. fund retained by United States.)
4. After Dec. 1, 1926, or before if United States finally cease to take energy. (Acc. fund less than actual cost.)	Contractor may demand.....	Value fixed by arbitrator, and—
	(*a*) If arbitration value equals or is less than acc. fund, United States to convey title to Warrior extension and Warrior substation, retaining all acc. fund.	At arbitration value, or any greater amount in acc. fund.
	(*b*) If arbitration value is greater than acc. fund, United States to convey title to Warrior extension and Warrior substation upon payment by contractor of excess of value over acc. fund. (60-day term prescribed for either *a* or *b* transfer.)	At arbitration value.

Contract T–69—Alabama Power Co. and the United States—Continued.

ANALYSIS OF SEVERAL ALTERNATIVE PROVISIONS FOR DISPOSAL—Continued.

Time or conditions.	Provisions for disposition.	Consideration, etc.
5. If contractor fails to purchase on United States demand.	United States may sell to another not for operation, but must remove within 6 months.	This being not a sale to contractor, price is problematical. (United States to return to contractor only such part of acc. fund as may remain over and above any excess of sale price over original actual cost to United States. (Not likely.)
6. If (*a*) not sold in 10 years from 1917, or (*b*) if not sold and no energy taken by United States for 365 days.	United States shall, upon demand, remove Warrior extension and Warrior substation within 6 months unless United States shall exercise its option No. 1 to demand purchase by contractor. If remove, United States returns all acc. fund.	(No sale, therefore no price prescribed, unless United States exercises option No. 1 for arbitration value.)
7. If United States take no energy for 2 years; or 1927, in any event.	United States, upon contractor's demand, to remove transmission line: *Provided*, United States may, instead, demand contractor purchase at arbitration value.	Arbitration value if sold. (This for transmission line.)

Colonel JOYES. I think that helps to give a clear idea of just what that article means. If there is any changed meaning in that from any of the provisions in the contract, it is inadvertent. I do not think there is. Before I start to discuss that analysis I would like to say what was the object of the whole thing.

The CHAIRMAN. Yes.

Colonel JOYES. The object was this, that the United States had to provide additional facilities to enable the power company to give it the power it wanted—to sell it, of course—and having provided those facilities, it wanted to get some return upon its expenditures if possible, and it wanted the best return upon its expenditures that it could get. We considered very carefully how we could do that. We possibly could have taken some land somewhere down there, whether at that particular place or not, seized the land or bought it, and gone ahead to build, but we did not have authority to buy any land at that time. The fact of the matter is there were specific legal provisions against it.

The CHAIRMAN. What were those legal provisions against it?

Colonel JOYES. Revised Statutes, 3736.

The CHAIRMAN. Have you any specific bill in mind that contained such a provision?

Colonel JOYES. This was not a bill; it was an act, a definite section of the Revised Statutes dating back, I think, to 1820 or something like that, providing that no land could be purchased without specific legislation providing for it, and there was another section of the Revised Statutes, 355, that was troublesome. That was a restriction that you had to get full written approval of title by the Judge Advocate General and also get cession of jurisdiction by the State legislature before you could go in and build on land.

Now, that bar, probably, you may think was removed by legislation in the summer of 1917, but it was not. There was a bill passed July 2, 1917, which is in the Statutes at Large, volume 40, page 241. That was an act to authorize condemnation proceedings of lands for military purposes, and it gave all necessary powers for acquirement, permanently or temporarily, of land by condemnation or by purchase, but only for certain purposes, and the purposes were the prosecution of works for fortifications, coast defenses, and military training camps. Those were the only three categories of purposes mentioned. We were not acting under any one of the three. We had no benefits from that legislation whatever. I say "we"; I mean either the work under my charge or any of the work of the Ordnance Department throughout. I called that situation to the attention of the Chief of Ordnance some time in August, 1917, and recommended, for the sake of the general business of the Ordnance Department, that he have it changed by further legislation, and he told me it was already in hand. Ultimately it was done. The act of October 6, 1917, did not help materially; but the act of April 11, 1918, was put on the record and that revises this previous legislation by putting in after those strictly military purposes—that is, fortifications, coast defenses, military training camps—the words "and for the construction and operation of plants for the production of nitrate and other compounds, and the manufacture of explosives and other munitions of war and for the development and transmission of power for the operations of such plants." That was the only change of any consequence in the act of July. That was the act of April——

The CHAIRMAN. April 11?

Colonel JOYES. April 11, 1918. I have a full copy of that, sir, if you wish to see it. I am sure it is right.

The CHAIRMAN. If there is no objection on the part of the committee, we will put that in the record. I do not think it has been put in the record heretofore. It is very short and I will have the clerk read it for the benefit of the record.

(The clerk read as follows:)

"Condemnation of land for military uses: That hereafter the Secretary of War may cause proceedings to be instituted in the name of the United States, in any court having jurisdiction of such proceedings for the acquirement by condemnation of any land, temporary use thereof or other interest therein, or right pertaining thereto, needed for the site, location, construction, or prosecution of works for fortifications, coast defenses, military training camps, and for the construction and operation of plants for the production of nitrate and other compounds and the manufacture of explosives and other munitions of war and for the development and transmission of power for the operations of such plants; such proceedings to be prosecuted in accordance with the laws relating to suits for the condemnation of property of the States wherein the proceedings may be instituted: *Provided*, That when the owner of such land, interest, or rights pertaining thereto shall fix a price for the same, which in the opinion of the Secretary of War shall be reasonable, he may purchase or enter into a contract for the use of the same at such price without further delay. * * * Act of July 2, 1917 (40 Stat. 241) as amended by act of April 11, 1918 (40 Stat. 518).

"Chapter XXIV, act of July 9, 1918 (40 Stat. 895), provides that during the World War"——

Colonel JOYES. I think that is hardly pertinent to the present point. I have no objection to your reading it, but it is a note I made on the paper for another purpose.

Mr. GARRETT. What was the date of that act?

The CHAIRMAN. April 11, 1918.

Colonel JOYES. There is one thing I think it is necessary to say here in order to clarify that particular situation.

The act of April 11, 1918, has been referred to before and it reads in such a way; in fact, it says, I think, that it is the act of July, 1917, as now amended, but the idea that is apt to be created by that is that the amendment is something inconsequential and that the act of 1917 was essentially that of 1918, which is utterly wrong. As I have told you, the act of 1917 gave the Ordnance Department absolutely no assistance whatever, because it mentioned nothing, no purpose, with which the Ordnance Department was concerned in any way, shape or manner, and the putting in of all those purposes was done by the act of April, 1918. The bill that the Ordnance Department had recommended and which started its course was a mere, brief amendment, making no mention specifically of the nitrate plants, but simply intended to broaden it out so as to include munition plants and so forth in general terms, so that any of the additional facilities that the Ordnance Department had to have could be provided under it. The specific mention of the nitrate plants and the power was put in in Congress, I believe.

That is the situation as to the law, and whatever the technical construction of it may be, that was what we had staring us in the face and was what remedy was given for it.

We had also difficulty about anything we wanted to sell, and we could not figure on getting a return of the expenditure, especially if it be on real estate, by providing for any sale, because there was no law for it; in fact, I think, there was—well, there was no law for it. I do not think I could cite you anything definitely forbidding it but it was understood that it could not be done, and those provisions that allowed for a sale came in later on.

So we cast about and we thought the best thing we could do was to arrange that we should take the temporary use of the land and such facilities as we needed of the Alabama Power Co. There was no bar to a lease or to a rental, while there was to a purchase. There could be no difficulty about giving up a leasehold while there might be about something that you held in fee, so that was the basis we thought was most practicable. You may say, Why did we go in there and get mixed up, interlocked and intertwined with a going concern so it could not be gotten away? And that has been said, and the reason was this: They had what we wanted there, and at that time when we were in the war, when we found what was needed, we went after it and took it in some way or other. Now, they had there the land. The land did not amount to anything, because land is land, and at lots of places you could find ground to build a power house on, but you can not build a power house on every corner lot and have it work and work decently. You have got to have water. You have got to have a place where the water runs right through. You have generally got to dig down 25 or 30 feet in the ground to get it to run through and to make a conduit for it. Now, the Alabama Power Co. had already installed a steam-power plant at Gorgas on the Warrior and they had just completed that, and they had left a blank end wall to it, a temporary end wall, with the express purpose of extending it so as to have more units. They had put in one unit. We saw their plans providing for it. They had led the water for the condensers in through underneath this one unit which they had installed, carried it right on down to an outlet in the river lower down, all concreted in, and some accessory foundation structures on the lower levels had been made for the additional extensions that they contemplated.

The CHAIRMAN. What extensions did they contemplate at that time?

Colonel JOYES. They contemplated two successive extensions. Now, this, of course, is not positive knowledge. I could not testify to this under oath or anything like that, but I am sure of it, as I have been told it many times, and I have seen the plans.

The CHAIRMAN. Where did you get the information?

Colonel JOYES. From officials of the Alabama Power Co., and I am quite sure I have seen the plans and I have seen the structures on the ground or in the ground where they had started to build. They had started the foundations, the substructure of the foundations. They had also, as I say, built the channel for the condensing water to much greater capacity than would be required for the one unit that they had installed. They had built it of sufficient capacity for three, which is sufficient proof.

Having those things, it meant a considerable gain of time for us, and time was a great thing with us because we wanted the power in six months. We wanted to be sure that when we got that nitrate plant we would have this steam station ready to back it up and not have power fail on us because the river was low. So that was quite an object. It meant not only taking a piece of land, so much area of land, but it meant taking a particular piece of land with already certain structures belonging to the power company already in the ground, and that is the situation that made it so particularly delicate and difficult for us, and reasons which I think will clear any mind that may still have the idea that there was a deliberate mixing and interlocking of things that was objectionable.

We started in there then to build this addition, tying it right into the other unit that the Alabama Power Co. already had, so that the two could work together. You could not have them two separate plants feeding power into the same system unless you had certain elements of control and coordination. To make power, alternating-current power, of high potential you have got to have it very carefully synchronized before you can put the output from two machines into the same line. It has to be either in one plant or you have to have a more expensive and troublesome installation coordinating it in two separate plants. So, naturally, we built it to go right into the one thing and make a unit that would be efficient and ready, and especially we felt it preferable to do that because that gave us a very proper and correct outlook to get some money back for the United States. In many cases where the Ordnance Department had at that time to put in additional facilities to get what the Government had to have, we thought, "This is all lost money; this is sunk. It is an expense account and not an investment, and we will never get any of it back"; but here we had an assurance of getting some of it back.

The CHAIRMAN. Did you know at this time of the act of June 3, 1916, the national defense act, which forbade any private company mixing in with the Government of the United States in any of the activities at Muscle Shoals?

Colonel JOYES. No, sir; I do not remember any such language as that. I mean to say, with all due respect, that those words you have used there were not in that legislation at all, and I remember the act very distinctly—section 124.

The CHAIRMAN. I will give you the exact words of section 124 of the national defense act.

Colonel JOYES. Yes, sir.

The CHAIRMAN. I will read you the exact language:

"The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital."

Colonel JOYES. Yes, sir; but this was not a plant or plants having any connection whatever with that act.

The CHAIRMAN. You did not construe this as having any connection with the act of 1916?

Colonel JOYES. Well, it was not a matter of construing it, Mr. Kahn, it was a matter of knowing that it absolutely had no connection with it.

The CHAIRMAN. How did you arrive at that conclusion?

Colonel JOYES. Because we never spent a cent of the money under that provision of law, under that section 124, for that purpose, either for the Alabama Power Co. work or for the nitrate plant No. 2 which it was to serve.

The CHAIRMAN. Just explain that for the benefit of the record.

Colonel JOYES. Well, I will tell you about that. When I started to work in the nitrate division in June, 1917, the matter was in this shape: We had the report of a commission of scientific men, business men, etc., which had recommended certain steps to be taken under section 124, to carry out the responsibilities and duties of the President thereunder, and those recommendations had been approved by the Secretary of War and by the President. They were turned over to the Chief of Ordnance and by him to me to carry out.

They were, first, to make a plant—I am not attempting to quote anywhere near verbatim, but the essence of the essential points were these: First, to make a plant to produce about 60 tons of ammonia per day by the process being developed by the General Chemical Co., which was a process for the synthetic formation of ammonia by the direct union of nitrogen and hydrogen; and another step was to put in a small plant to study the oxidation of ammonia to make nitric acid, nitric acid being a principal material for explosive work; and again, another step was to build another experimental plant for the concentration of nitric acid from the strength in which it was usually obtained to that in which you need it for making power, etc., an essential and necessary process and one not used theretofore here in this country, because when acid is made by the sodium nitrate process, it comes out strong. When you make it by any of the fixation processes, it comes out weak, and it has to be concentrated before it is usable in most of the explosives processes.

Those were the three main steps. There were certain other investigations that were suggested and recommended, some for which small allotments of money were suggested—investigations of a sodium cyanamid process and one or two others and, of course, general, continuing investigation of fixation in general.

I started in, then, at the beginning in July to put in a plant to follow out that recommendation, which was all I had a mandate for, and we put in the United States nitrate plant No. 1, not at Muscle Shoals but a little to the southwest of the city of Sheffield, Ala., which is right in the vicinity of Muscle Shoals.

The vicinity of Muscle Shoals has no real significance to that plant at all, but it was simply that there was a plot that, all things taken into consideration, seemed to be the best place to put it to start with. That plan, unquestionably, comes in the purview of section 124 of the national defense act. There is no doubt about it.

The CHAIRMAN. The money used for its construction was all taken from the $20,000,000 referred to in that act?

Colonel JOYES. Yes, sir. We started in with that thought, bought the land with that money, and stadted construction with that money, and we expected to complete it all out of that money. After a while we found the expense was getting heavier than we anticipated and running considerably beyond our estimate. We had added things to that plant for war purposes that were never contemplated in the nitrate program and that were not strictly chargeable to the $20,000,000.

either. That may seem to be a detail which may simply bulk the record, but it explains why we went outside of the $20,000,000 to get other money to help out in plant No. 1. That was the stiuation there.

In the fall of the year I was called into the office of the Chief of Ordnance and was told that the situation was getting quite acute as to the supply of explosives for war operations, and the material to make them out of; that they were going to go to ammonium nitrate, a mixture of ammonium nitrate and T. N. T. for shell filler, and they could not see where they were going to get enough of either. They were trying all sorts of things to get more toluol and more ammonium nitrate, and they asked me if there was any fixation process that would help out in order to get the ammonium nitrate that was required by the program. I said that there was. They said what process would you use—the same one that the committee recommended and that you are putting in at nitrate plant No. 1, that is, the synthetic ammonium process? I said, no, I would not. I said it is not a developed process; we have already gone to a pretty heavy expense in the plant, on a pretty large scale to try an experimental process, and while we think it will come through all right, it may not come through under the first trial, and we do not know when it will come through; I would not trust it for necessary, urgent use, not at all; and the only thing I know of that you can trust and that we have is the cyanamid process.

Mr. PARKER. You said that was in the fall. Was it 1917 or 1918?

Colonel JOYES. It was 1917; as a matter of fact, it was in October, 1917. They asked me if I had any communications from the company that controlled the process. I had one tentative, preliminary one we had gotten from the Cyanamid Co., simply to find out what they had, whether it was going to be a usable process, and an organization that we could depend upon in the event of just such a need as came up. We showed that, and we were told to get into communication with the Cyanamid Co. and put up to them the present requirements and see what kind of an offer they would make. We did that, and these numbers of offers that have come out in the several investigations and been put into the records, were brought forth.

I think the first of those serious offers, I mean the first offer addressed to the war needs of the Government, was dated October 29, 1917, or thereabout. The final one was dated November 13, 1917.

The CHAIRMAN. Did that come from the Air Nitrates Corporation?

Colonel JOYES. The Air Nitrates Corporation at that time did not exist. It came from the American Cyanamid Co. Those proposals stated that in order to do what the Government asked them to do they would form a subsidiary corporation, of which they would own, essentially, all the stock, to carry on such of those war activities as the Government wanted.

What I wanted to emphasize right there was the fact that the cyanamid process had been thoroughly investigated—I say thoroughly—apparently thoroughly, considerably investigated by the commission that had been established to look into the matter of nitrate supply before I ever got into the game at all, and they had deliberately kept away from it, and recommended a trial of this newly developed process, the synthetic ammonia process, instead. Therefore, as the program was turned over to me, the cyanamid process was put aside, and, to an extent, adversely reported upon, because it was considered that it was not the process which promised to be most economical in the production of the products we were interested in in the near future. They thought that this coming synthetic ammonia process promised to be much more economical. That was the situation.

So there was nothing in the way of a mandate, although there was an adverse mandate as to the bringing of that plant into being for the use of the cyanamid process under section 124 of the national defense act.

When we decided to build that plant, however, we had to think how we were going to do it; how we were going to get a site, and where we were going to get the money to do it, and so on. We had, as I told you, a specific bar on the statute books to buying any land. We looked through the appropriation acts and we found no money appropriated for the purchase of land, and we were in a predicament there. We could get the money, according to opinions which we had, from the general appropriation acts to build the plant, but we could not get the money to buy the land. So the only way I saw to do it was to take some of this money provided for in section 124 of the national defense act to cover the purchase of land alone, and I got an allotment made by the President of the sum of $200,000 to pay for the purchase of the land for United States nitrate plant No. 2 at Muscle Shoals. That was

put on my books, and at one time I got an addition to it, because I found that the anticipated cost of the land went beyond what money I first got, and there was altogether allotted to me $350,000 for the purpose of buying the land. But I never spent a cent of it. I realized the disadvantage of using that money to buy the land for the nitrate plant, because I knew the only way we could make the nitrate plant was to work with a private corporation, and the law forbade that. So we were not in a pleasant situation. But we saw no escape from it, and we had to have the stuff, and we went on with it.

But before it came to the payment for the first parcel of land there was legislation which did permit the purchase of land out of the general appropriations for purchasing munitions, namely, armament of fortifications. I am referring to that new legislation, the act I just read, of April 11, 1918, which removed the bars, and we had a decision thereunder shortly after the passage of the act that said that in view of that legislation moneys appropriated by the general appropriation acts for the purchase of munitions could be used to purchase the necessary land for producing the munitions. As soon as I saw this decision which came from the Judge Advocate General's office I went out and said we will get out of this embarrassment—of buying the land for this plant, where we have got to work with a private corporation, out of funds appropriated by a law that prohibits us working with a private corporation—by not spending any of the money in any way, shape, or manner in connection with this plant. So the money being on my ledgers intact and never touched I had it revoked.

I have a letter here which will show what I did, and I can put this letter in the record if you want it. This is dated January 20, 1919, after I had learned of the decisions under which the purchase of land was allowed to be made out of current appropriations for war munitions. This letter was addressed to Mr. Dorr, office of Assistant Secretary of War, Director of Munitions. It says:

"Pursuant to conversations on the desirability of paying for land for United States nitrate plant No. 2, Muscle Shoals, Ala., and the quarry therefor, from appropriations other than 'nitrate plant' (sec. 124, national defense act, approved June 3, 1916), I hand you the following memorandum of opinions in support of the use in the present emergency of general supply appropriations, such as 'armament of fortifications,' for land purchases necessary to the supply of munitions.

"In the first place, the real reason for United States nitrate plant No. 2 was the war emergency"—

I had those words underscored in the original letter—

"the need for the supply of ammonium nitrate and the need for saving ammonia and sodium nitrate imported from Chile," both of which needs this plant was to meet.

"All statements to congressional committees, etc., have, I am sure, been correct in thus stressing this war need of this plant.

"In making the allotments previously made for purchase of sites for the nitrate plants, the principle was followed of using funds out of the appropriation 'nitrate plant'—that is, section 124 of the National Defense Act—'because there was no doubt whatever about the applicability of this appropriation to the purchase of land, and it was considered at that time that the appropriation "armament of fortifications" could not be used for the purchase of tracts of land not specifically mentioned.'

"However, in the summer of 1918 many purchases of land were made out of general supply appropriations as necessarily incident to the procurement of a sufficient supply of the munitions for which the acts of appropriation provided.

"On July 26, 1918 (T-58606), I submitted the specific question to the Ordnance Department for decision in regard to the sites of United States nitrate plants 3 and 4—at Toledo and Cincinnati; plants started but never completed—and the following indorsements were made thereupon:"

[First indorsement.]

AUGUST 2, 1918.

Lieut. Col. Ralph Crews, Contract Section, Procurement Division.
To: Lieut. Col. W. M. Crane, jr.

1. The question propounded in the within memorandum has been considered in the light of the annexed opinion rendered by the Judge Advocate General, as of July 10, 1918, and in consultation also, with office of the Judge Advocate General.

2. You are advised that the armament of fortification money may be used for the purchase of land for nitrate plants, to such extent as is fairly adjudged reasonable and necessary in the carrying out of the purpose set forth in the appropriation, viz:

"For purchase, manufacture, and test of ammunition for mountain, field, and siege cannon, or necessary experiments in connection therewith, and machinery necessary for its manufacture and necessary storage facilities."

3. If, in the exercise of fair judgment, it is decided that all of such land would not be necessary for the purpose set forth above because of the fact that some of the nitrate would in all probability be used for other purposes, correct practice would require an estimate of what portion of the purchase price is fairly to be attributed to the carrying out of that purpose, and the armament of fortification money should be drawn upon only to that extent.

The second indorsement upon that paper, transmitting it down to me as chief of the nitrate division on August 5, 1918, reads as follows:

ORDNANCE OFFICE,
ESTIMATES AND REQUIREMENTS DIVISION,
August 5, 1918.

To: Chief Nitrate Division.

1. The Chief of Ordnance directs attention to the second paragraph of the foregoing and instructs that the nitrate division shall proceed in the matter of purchase of land for the nitrate plants in accordance therewith.

JOHN R. SIMPSON,
Colonel, Ordnance, National Army.

"7. Decision of July 10 referred to by Colonel Crews in the first indorsement above was J. A. G. O., 601, July 10, 1918. Digest of this opinion is as follows:

"Public property: Secretary of War may acquire power plant from ordnance appropriations.

"'Under the act of July 2, 1917 (40 Stat. 241), as amended by the act of April 11, 1918 (Public No. 127, 65th Cong.), the Secretary of War, if in his judgment the acquisition of a power plant is reasonably necessary for the expeditious procurement by manufacture of ordnance stores, may acquire such power plant from ordnance appropriations. The Secretary of War, upon such terms as may protect the Government, can legally arrange for the transmission over private or municipal lines of the power developed at such plant to the points where the same is desired to be used.'

"8. Furthermore, the Ordnance Department informally asked the Judge Advocate's office (00–601–1014 Misc.) to be shown opinions on this question, receiving in reply four inclosures, three being correspondence containing opinions and one a copy of Public Act 127, Sixty-fifth Congress. Copies herewith, marked inclosures 1–5, inclusive.

"9. The Public Act 127, Sixty-fifth Congress, approved April 11, 1918, above referred to, appears to have removed not only specific restrictions of section 355, Revised Statutes, but by conferring authority upon the Secretary of War in time of war to institute condemnation proceedings in respect to any land needed for specific war purposes or upon agreement as to price to purchaser to write a contract for purchase and to take immediate possession of such lands did also remove any limitations of law preventing or forbidding the use of funds, under general appropriation acts for procuring supplies, for the purchase of lands, as well as other facilities necessary to the procurement of such supplies."

The line of reasoning here, of course, was that the only thing that had prevented our using the general appropriations in the past for purchase of land had been the Revised Statutes, and that bar was lifted, and, furthermore, the fact that the legislation of 1918 specifically authorized the Secretary of War to go and take immediate possession of lands involved, and that there must be some provision for paying for them. That was the reasoning upon which it was all based.

"10. This view is supported by the following, which appeared in the fourth indorsement, Judge Advocate General's office, April 23, 1918, on Judge Advocate General, 601 purchase:

"'It is the opinion of this office, therefore, that the act of April 11, 1918, fairly construed, confers authority for the acquisition of either title in fee or a temporary interest in lands needed for the test of guns and other munitions of war, for the manufacture of which appropriation had been made by Congress.'"

That specific decision was with a view to a purchase of land for a proving ground. That is why they refer it to the test of guns.

"11. That opinion confirmed such use of supply appropriation funds for the purchase of land for the test of the supplies. If the approriation be available for such an incident to the procurement of the supplies appropriated for it would seem certain that it could be used for such an essential as land for the manufacture of the supplies."

That was signed by me.

Coming out of that I was given a new allotment out of the armament of fortifications appropriation to pay for the land for the United States nitrate plant No. 2, and the original allotments made for that purpose out of the "nitrate plants," section 124 of the national defense act, were revoked in toto, every cent.

The CHAIRMAN. Did you return that money back into the Treasury?

Colonel JOYES. It was just a credit on my books, and when an allotment is revoked it means that the credit is taken back. It is the same thing as if I had written or received a check for $350,000 and I drew my check for $350,000 back. As a matter of fact, it was transferred to another account in my office; it was turned over to plant No. 1 to help finish up, I think.

The CHAIRMAN. The money for plant No. 1 was taken out of the money——

Colonel JOYES (interposing). Yes, sir; but I say that that $350,000 from the national defense act which had been given me to buy land for plant No. 2 was, I think, simply transferred to plant No. 1, because we needed more money there. At any rate, it was credited to some other activity or else taken away from me. It was altogether separate from any connection whatever with plant No. 2, the cyanamid plant, and there was never a cent of it spent for that purpose at all. There has been so much said about that that I thought I had better go into it rather elaborately to clear it up.

The CHAIRMAN. We are very much obliged to you, because the whole thing seems to have been all mixed up.

Colonel JOYES. I have been digressing, Mr. Chairman. You wanted me to analyze the provisions for sale in the Alabama Power Co. contract.

The CHAIRMAN. Let me ask you this question: You considered that nitrate plant No. 1 was constructed under the act of June 3, 1916, the national defense act?

Colonel JOYES. Absolutely; yes, sir.

The CHAIRMAN. And you considered that nitrate plant No. 2 was not so constructed?

Colonel JOYES. I know it was not.

The CHAIRMAN. It was constructed out of money appropriated for armament of fortifications?

Colonel JOYES. The money appropriated to purchase munitions and armament of fortifications; yes, sir. I think every penny came from that appropriation. There may have been some other, but absolutely not a penny of it came from the national defense act, I am sure of that. We were afraid to go on with it, because of the talk about the prohibition against working with a corporation. We could not do it. We thought we might do it in the first place, but we were afraid all the time, and as soon as we found a way out we got out, and got out quick, and everything connected with it.

The CHAIRMAN. That is very instructive.

Colonel JOYES. Coming back now to the provisions for sale in the Alabama Power Co. contract. When we started out we had a proposition from the Alabama Power Co. which said if we would advance them about two and a quarter million dollars they would put in there necessary facilities as their own investment, and would then furnish us the power that we wanted, give us a firm demand for it, and something like 7 mills would be the price they would ask for it on every kilowatt-hour which we bought from them, and they would give us back so much, immediately, or set it aside, to make an amortization fund to pay us back what money we had advanced. When we could not make the loan we thought we would make the construction ourselves, because we could see a color of a way to do it. We then cast about to see how we would be sure to get some of that money back. We figured we would try to have some kind of a repayment to us each time we made a payment to them for power, that we would get some back into the Government's pocket to go toward the

repayment of a good, substantial part of the money we had put in for that structure. We worked always along those lines, and when we looked at it we said, "How are we going to fix that up; what are we going to do with it? If we take the money back, it must go somewhere; how is that going to be treated? If we buy the power from the Alabama Power Co. and pay them, and then we say to them, 'Give us back so much, then we can put into the Treasury what comes back, and that will be a partial payment for the purchase of that plant by them.'" It was the only way I see, or ever did see, how you could handle it, and it was exactly the plan that was being followed in other places. I can show you, if you want it, that instead of this contract being, as some people have hinted, an unprecedented monstrosity, it has got lots of good precedents, and that the precedents have gone further than it went, and that those that went the furthest got the best ultimate result in the settlement generally.

The CHAIRMAN. Who entered into the contract with the Alabama Power Co. for the Government?

Colonel JOYES. The signatory officer was Col. William Williams.

The CHAIRMAN. Did you have anything to do with it?

Colonel JOYES. I had a great deal to do with it: all the time I took a leading part. I was in charge of all the negotiations from December, 1917, up to about August, 1918, or thereabouts, and from that time on I took a leading part in the negotiations. Col. William Williams was the one who was looking out to see that the thing was put into the best possible legal shape it could be, and yet put in nothing in the way of a provision that I did not assent to. There were other people with us. I had men of large experience in power matters, who had been frequently employed by several of the big investment companies, and I had some lawyers with me who had had considerable experience. One man who helped a great deal a number of times was Mr. Anson Burchard, vice president of the General Electric Co., who was in a strictly advisory capacity, so far as any official appointment was concerned; but he was a man who had been brought in by Mr. Stettinius to handle some of the certain broad aspects of business for him and give him the big business point of view upon them as to what they really were.

The CHAIRMAN. I take it from what you have stated that by reason of the fact that you did not use a dollar of the money that was appropriated in the act of 1916, and you did use the money from the fortifications allowances, at nitrate plant No. 2, you felt you were not running counter to any of the provisions of the act of June 3, 1916, in building that plant.

Colonel JOYES. I felt absolutely confident of it, sir; did it with that intent; and felt absolutely confident we were perfectly correct in it, and had been so advised by several people at the time. I never had any doubt of it.

The CHAIRMAN. I think that is about all the information we want on this subject. I think all the correspondence that you say Mr. Williams had regarding this matter you have either read to us or it is in the record. You have read to us those things which we did not have in the record before.

Colonel JOYES. I have read no correspondence of Colonel Williams. The correspondence I read was between me and the Ordnance Office, and the inclosures to it were the decisions from the Judge Advocate General's office.

Mr. PARKER. I want to know whether the correspondence on which you made the agreement with the Cyanamid people——

Colonel JOYES (interposing). Starting that work?

Mr. PARKER. The whole thing is in the record already?

Colonel JOYES. Yes; I think that is all in the record.

The CHAIRMAN. Some of the members of the committee will want to ask you some questions.

Colonel JOYES. I would like to volunteer one thing, Mr. Chairman, and that is in connection with this analysis I have made of the provisions for sale, several copies of which are around the table. That was intended to be helpful, and I did it because a view of that article, Article XXII, or whatever the number is, is very difficult to get from reading the contract. I had to sit down and make this analysis in order to understand it myself and know just what it meant, in spite of all the work I had done in connection with it. This analysis first gives a column covering the time or conditions under which the different alternatives come up, and then another column covering the provisions for disposition, and a third column stating what consideration there is.

The first section of that article says that three years after the end of the war the United States has the option to demand that the contractor purchase the

Warrior extension and the Warrior substation, and the consideration is the arbitration value.

The second section of the article says that if and when the accumulated fund shall equal or be greater than the actual total cost the United States has spent, then the contractor may demand that the United States convey title in the Warrior extension and the Warrior substation back. In that case the United States was to retain—and you will find that the contract supports this statement absolutely—the United States was to retain the total that had been paid in by the Alabama Power Co. to it from time to time while it was buying power from them, except such surplus as the Alabama Power Co. might have paid to the United States over and above the total original expense of the United States. In other words, under that settlement, if we took power from them long enough, bought enough power, under the contract there would have been enough money paid in by the Alabama Power Co. to the United States to more than cover the actual total expenditure that we had made on the proposition. In that event they could demand that we sell to them, and we would then sell to them at the total we had spent, every penny of it back. That was, of course, hypothetical, you would say, a thing never to be realized. But it would have been realized, and if you figure it out I think you will find that if we had gone on to the end of the period contemplated by the contract, 10 years, it would have been realized. We had no way of telling at that time how long the war would go on, and whether the plant would have a use after the war. So that is not altogether hypothetical.

The third alternative, in section 3, said that at any time whatever the contractor may demand that the United States convey title to him, provided he pays the total actual cost we have put into it.

The fourth alternative, in section 4, provided that after December 1, 1926, or prior to that, if the United States finally ceases to take energy, and the accumulated fund is less than the actual cost, the contractor may demand, eventually, that the plant be sold to it at a value to be arrived at by arbitration. Of course, if we are going to provide for any sale, if we are going to have an agreement that is worth anything, we have to touch upon the price. We could not set a firm price; neither side could then set a firm price, because we could not tell what the conditions would be, or the value of the plant, or anything of that kind. In some of the earlier contract drafts we wrote that the prewar cost would be the price, thinking that was the way to get at it. Ultimately we came around to what we considered a much happier expression of it, that the value as fixed by arbitration should be the value, and I think the definition of that value, the arrangements for arriving at it are sufficiently clear in the contract to show that that meant a fair value as a going concern at the time the appraisal was made.

The principle that has been followed in settling other contracts of a like status, has been that they figured out a reproduction value of the plant at the time the appraisal was made, estimating what it would cost to build that plant at the time of settlement, say, for example, to day. Then, assuming a plant actually built, say in 1918—it has been used for four years—and you charge off four years of depreciation, four years of the life of the plant are gone. So you arrive at a fair present value, and naturally there may be consideration, and I think should be and would be consideration given to the market for the product of the plant, and all other considerations indicating its value as a going concern. That was the thought we all had in our minds on our side, and I am sure the same thought was in the mind of the power company, from what I have heard them say. I am not speaking for them, but for myself.

The fifth proposition was another option, that if the contractor failed to purchase on the demand of the United States, the United States may sell to another party, but not for operation. But it must remove all of its property from the premises of the power company within six months. This being not a sale to the contractor, the price is, of course, problematical. It works no hardship upon the United States at all.

The situation was this. You look back at my original purchase order and you will find that I called upon the power company to grant us the temporary use of their land in order that we might build up there the facilities for what we wanted, and it was our thought all the time that it was a temporary use of their land and their facilities. There are plenty of precedents for that in other work done during the war. There was a coke-oven contract I happened to look at the other day, signed in May, 1918, to build a coke-oven plant, and

build it upon ground leased from the owners, who were to be the owners of the plant, and there is a provision there for the sale of the plant back to the people who owned the land. They were allied to near-by steel people, etc. To show how that kind of a contract is apt to work out, that contract was settled in 1920, and the Government had spent $6,000,000 on the job, and it was closed out by payment back to the Government of $4,140,000, about 70 per cent of the Government's war expenditure for that purpose, brought back to it and recaptured. I happened to see several others which were settled about in that proportion, anywhere from 50–50 up to 75 per cent of the original expenditure came back to the Government.

There are some other provisions, such as financing power companies at other places, where the Government actually put in money after an arrangement was made by which they could do it, and they had not even the same color that we had here. It was not a question of the United States ever owning anything. The United States just put the money in the bank and the people drew upon it without any restrictions whatever, other than the business undertaking to put it into the plant that they were building for Government purposes. They put in some money of their own, and upon final settlement the power company was not to repay all of the advance, but got credit for depreciation, excess war costs, etc. The company owned the plant when they got through. There are two contracts—one the coke oven and one the power plant—and I could give you the details of several other coke ovens or power-plant transactions along those lines.

There is still another proposition, and this is the vital point, I think, in the whole of article 22 of the contract; that is, in section 6. The alternative there is provided that should anything be wrong or unenforceable in any of the preceding alteratives, if the plant be not sold in 10 years from the date of the contract, 1917, or if for any reason the United States did not take energy from the company for 365 days, the United States shall, upon demand, remove the Warrior extension and the Warrior substation within six months. In other words, it ceases its temporary use of the property of the Alabama Power Co. and gets out of the way; that is, unless the United States shall exercise its option No. 1 and demand that the contractor purchase at the arbitrated value. That is all there is in that.

Mr. PARKER. I thought No. 1 related to the cost?

Colonel JOYES. No, sir; option No. 1 is on arbitration value. The seventh provision relates to the transmission line.

The CHAIRMAN. You have just one more provision?

Colonel JOYES. Yes, sir; the seventh relates to the transmission line, and says if the United States shall take no energy under this contract for two years, or in any event in 1927, the United States shall remove the transmission line from the Alabama Power Co.'s premises, unless the United States prefers to demand that the contractor purchase it at an arbitrated value—that is the gist of it.

The CHAIRMAN. Mr. McKenzie will yield to Mr. Greene, because Mr. Greene will not be able to be here at 2 o'clock.

Mr. GREENE. Colonel, I rather think, on reflection, that my questions have been anticipated in some of the questions that have been directed to you already. But I want to be quite sure I understand this situation as you do.

Acting under the direction of section 124 of the national-defense act you established the nitrate plant that was contemplated by it, at what is now called nitrate plant No. 1?

Colonel JOYES. Yes, sir.

Mr. GREENE. About what date was that policy determined upon and work begun or preparations for it begun?

Colonel JOYES. I am quite sure it was within a day or two of July 13, 1917. It was within a day or two of that date that the matter was approved by the President and by the Secretary of War and handed to General Crozier and passed over to me.

Mr. GREENE. What was your understanding of the language of section 124, that the Government was embarking in anything like an established and continuous manufacture of nitrate and fertilizer, or that such plant as was to be set up under section 124 was in the nature of experimental, research work, looking toward the development of the art?

Colonel JOYES. I think the language unquestionably, primarily, covered investigation and preliminary searching out, and at the same time the act did provide specifically that the President might take over processes and take over power facilities, make power developments, etc. And it provided for the sale of the proceeds, etc. I thought there was ample provision of law under that, if it had been desired to do it, and if the time had been thought to be ripe to go into an actual business, the business being primarily for munitions and material for munitions, and rather incidentally for agriculture.

Mr. GREENE. When you had therefore done the business you did with what is now known as nitrate plant No. 1 you thought you were in compliance with section 124 of the national defense act, and that you had carried out its general intent and purpose.

Colonel JOYES. Yes, sir; but not necessarily completely.

Mr. GREENE. As far as you went?

Colonel JOYES. Directly under it.

Mr. GREENE. When you started on No. 2 that is the time you divorced yourself from section 124 of the national defense act, after some reflection, and after thought about it, taking counsel to make yourself very clear in your position that you were no longer acting under that; believing that you had accomplished, as far as you had gone, the purpose of section 124 in another place; is that your understanding?

Colonel JOYES. Yes, sir; especially so because the cyanamid process had been quite considerably before the nitrate commission, which made recommendations as to the program to be followed out, and they had declined to recommend it. I would prefer, if the committee is interested in that, that you look up the actual wording of the report of the nitrate commission. I can give it to you, if you desire it, because I would be afraid that a little turn of a phrase might have a wrong meaning. I do not mean to say they ever recommended against it, but they had considered and passed over it, and recommended other action.

Mr. GREENE. What I am getting at is where you differentiated between not merely the authority and limitation of section 124 of the national defense act, but this property which is now under our consideration.

If it is to be understood that nitrate plant No. 1 was proceeded with, as far as it did go, under the terms, authority, and limitations of section 124 of the national defense act, then we are to understand that nitrate plant No. 2 was primarily and completely a war proposition?

Colonel JOYES. Absolutely such, in my opinion; that was my intent, and that was supported by the nature of the actual need which inspired the creation of plant No. 2.

(Thereupon, the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met, pursuant to recess, at 2 o'clock p. m.

STATEMENT OF COL. J. W. JOYES, ORDNANCE DEPARTMENT, UNITED STATES ARMY—Resumed.

The CHAIRMAN. Colonel, when we took a recess, the members of the committee were about to begin asking you questions. Out of order, Mr. Greene, of Vermont, asked you a few questions. We will now begin by having Mr. McKenzie ask you some questions, he being the senior member on the committee.

Mr. MCKENZIE. Colonel Joyes, you are a commissioned officer in the Regular Army?

Colonel JOYES. Yes, sir.

Mr. MCKENZIE. How long have you been commissioned in the Regular Army?

Colonel JOYES. My first commission was dated in 1894, June 12 or thereabouts—1894, when I graduated from the Military Academy.

Mr. MCKENZIE. You are a graduate of the West Point Military Academy?

Colonel JOYES. Yes, sir.

Mr. MCKENZIE. Have you been continuously assigned to the Ordnance Department?

Colonel JOYES. I have; since 1897.

Mr. MCKENZIE. You explained at some length this morning, Colonel, the different funds from which the construction at Gorgas and also at Muscle Shoals, used in construction at those two different places, and gave a very interesting explanation. However, do you consider that material at this time so far as this committee is concerned?

Colonel JOYES. I have not any opinion about that, sir, except I have noticed a good many remarks on the record before to which considerable importance seemed to be attached, so I thought it was necessary to clear it up by a statement of the facts.

Mr. MCKENZIE. You testified this morning that you were chief of the division, as I understand, handling this character of work.

Colonel JOYES. Yes, sir.

Mr. MCKENZIE. And as such chief, if I understood your testimony correctly, you assumed full and complete responsibility for all that occurred in connection with the development at the Warrior steam plant and at Muscle Shoals.

Colonel JOYES. Yes, sir. The purpose of the Division T, later called the Nitrate Division, to which I was assigned in May, 1917, was, of course, the carrying out of the different purposes and objects of the national defense act, section 124, the nitrate supply, which was largely the investigation of possible processes and perhaps the development of promising processes; in general, to look around and see what we could find, in addition to the carrying out of certain specific things that had been recommended by the Nitrates Commission. Now, pursuant to that, after starting out on the special work which the commission had recommended, that was No. 1 plant——

Mr. MCKENZIE. Can you give us the date of the report of that commission?

Colonel JOYES. Yes, sir; that was recommended by the commission and we followed——

Mr. MCKENZIE (interposing). I mean the date when they filed the report of which you are speaking.

Colonel JOYES. I think that report was dated May 11, 1917, or thereabouts, and it had been under discussion for some little time, and it was finally approved on or about the 13th of July, 1917. That, I think, was the exact date that Mr. Baker, Secretary of War, hnaded it over with his and the President's approval to General Crozier, Chief of Ordnance, and the same day General Crozier handed it to me.

In going ahead with the building of the synthetic ammonia process, we also began to look around and investigate certain other processes; among them was the sodium cyanide process and one or two others, none of which was in a sufficiently developed position to be of any use, but we looked ahead to an orderly study of all the processes that might be heard from and to do what we could to investigate them.

In the course of that, a prominent process was the cyanamid process, and, as I say, that was one which the commission had considered very carefully and which they had not seen fit to recommend for any immediate attention by the Government for several reasons: In the first place, it was a thoroughly developed process. Another reason, not exactly stated by the commission, but, I think, to be inferred from their report, was that they thought the cyanamid process would not be the most economical process of the near future; but, anyhow, we thought it worth while to reexamine that a little bit, realizing that we were then in the war and might have a need to make some use of certain processes of fixation for the immediate, urgent demands of the war. We cast about to see what we could use in an emergency of that kind, and we decided in our minds that the cyanamid process was the only process we could use for that purpose, and so that was the answer we had ready to make when we were asked if we could help out, in October, 1917, in the provision of needs for the war. So you see how we were drawn into it in that way. It was rather an incident, due to the fact that we were an organization already established, with some information as to fixation processes.

Mr. MCKENZIE. At any rate, you decided that you would undertake to process nitrates in two ways—by the cyanamid proces and also by the so-called Haber process, or the synthetic method, I believe you call it.

Colonel JOYES. Yes, sir.

Mr. MCKENZIE. Now, Colonel, you testified this morning that you had a number of assistants.

Colonel JOYES. Yes, sir.

Mr. MCKENZIE. Who were also commissioned officers in the Army?

Colonel JOYES. Yes.

Mr. MCKENZIE. Emergency officers?

Colonel JOYES. The principal ones were; yes, sir. I had no Regular officers assigned to me at all at that time. I had a number of men commissioned in the National Army, or Reserve Corps first and then the National Army, and then some of them later on got commissions in the Regular Army, but I also had some civilians.

Mr. MCKENZIE. Did you have anything to do with the procuring of commissions for these various officers that were under you in this department?

Colonel JOYES. Oh, yes.

Mr. MCKENZIE. You did?

Colonel JOYES. The only way you could get an officer in those days was to try to find somebody you thought had what you needed, and go out and rustle for him and fight with other people for him.

Mr. MCKENZIE. Was Colonel Williams commissioned at your request?

Colonel JOYES. No, sir; I never heard of him until I took the contract to him; at least, I never heard of him directly.

Mr. MCKENZIE. Were any of the officers you mentioned this morning commissioned at your request?

Colonel JOYES. I do not think so. Those lawyers?

Mr. MCKENZIE. Yes.

Colonel JOYES. I do not think any of them, except possibly Nightingale. Captain Noble, I think, was already commissioned before I got him. I asked to have him transferred to me if I remember correctly. I never saw him until he reported for duty. I know that.

Mr. MCKENZIE. Just what procedure did you go through with down there when you wanted to commission a man? Haw was it brought about?

Colonel JOYES. Well you generally tried to find where you could get a man who had what you needed. You generally had an interview with him to find out if he appealed to you and then you would get him to make up an application and pass it through some of the boards that they had. They changed the organization several different times during different epochs of the war but you always had to go first through the personnel branch of the Ordnance Department and get them to O. K. it and then get the man commissioned by the "higher-ups" in the War Department. It was a pretty slow process sometimes and sometimes it was rather easy.

Mr. MCKENZIE. Is it not true that frequently a man was commissioned an officer in the Army on the recommendation of friends who might come to intercede for him—I mean in the different staff corps?

Colonel JOYES. I have not much dout that was done in some cases But I do not think that the intercession of friends was a determining factor in many appointments made during this war. It was remarkably clear from that sort of thing. It was always required that the man being proposed for a commission or seeking one would have to put up some letters from persons that he knew, stating what kind of activities he had been engaged in, what kind of education and capabilities he had, and so on. It was always preferable and more weight was attached to those that did state something specific about his capabilities, his education, and the kind of position he had held of trust, etc.

Mr. MCKENZIE. I do not take it that that is material, Colonel, in this particular examination.

Colonel JOYES. No, sir.

Mr. MCKENZIE. Inasmuch as you have already stated that so far as these two particular contracts are concerned, the one with the Alabama Power Co. and the one with the Air Nitrates Corporation, they had your unqualified approval.

Colonel JOYES. Yes, sir; meaning, of course, approval in the sense of concurrence—not necessarily of admiration for each individual point of the contract.

Mr. MCKENZIE. But you O. K'd them.

Colonel JOYES. I officially approved them; yes, sir.

Mr. MCKENZIE. And you were the representative of the United States Government that had the power through your inferior officers to bind the Government in these two contracts and did do so?

Colonel JOYES. Essentially, that is correct, but it is not exactly accurate, Mr. McKenzie, because at certain times I did not have the delegated power to put my name to a contract.

Mr. MCKENZIE. I see.

Colonel JOYES. And I did not always have the unqualified power to sign a contract and have it stand and go forth and be executed without approval by some other authority.

Now, coming to this Alabama Power Co. contract, for example, I knew you would ask questions about that particularly, so I happened to get up the ap-

proval records for that, and I will show you what we had on it. I think I have that here. Take, for instance, this Alabama Power Co. contract; this is what they call the approval sheet that was attached to that contract, headed with the title of the contract and signed first by me as negotiator, signed by C. F. Beames, major, Ordnance Department, United States Army, and by E. P. Prentice, major, Ordnance Department, United States Army—and I will say, by the way, there, that Major Beames was under me and was one of my subordinates. Then there was Major Prentice, Capt. G. M. Alexander, Lieut. Col. Dale Bumstead, Ordnance Department, Maj. R. H. Swartwout, Ordnance Department. Those four, I think, were all officers of the procurement division of the Ordnance Department, and it was their especial duty to examine contracts that were put up to them and give them an examination, and sign if they concurred. They had no part in the negotiations and were therefore in the nature of officers of review. Then, below that appears the notation, "Approved by Board of Contract Review of Procurement Division, November 8, 1918, (signed) W. Arthur Babson, secretary." Below that appears this statement: "I concur in the approval of this contract, (signed) Anson W. Burchard." He is the vice president of the General Electric Co. and was the thoroughly trusted but not official representative of the Assistant Secretary—first Mr. Stettinius and later Mr. Crowell.

Mr. McKENZIE. Colonel, you have stated that the report of the nitrates commission was filed, I think, some time in May, 1917.

Colonel JOYES. Yes, sir.

Mr. McKENZIE. Up to that time had you taken any steps to develop the production of nitrates?

Colonel JOYES. I had not been connected with the matter at all until the later days of May, 1917. I was in command at the Picatinny Arsenal, the powder factory in New Jersey, and was brought out of that establishment about—I left there about the 27th of May or else arrived here on the 27th of May.

Mr. McKENZIE. How soon after that did you become interested in nitrate production?

Colonel JOYES. Immediately I arrived in this city, in the last days of May, I was told that that was my duty and I began to read up on it, because up to then I had paid no particular attention to it, except as a matter of news and current information; and I was informed of the report of this commission and was told that it was just waiting to have the attention of the President and the Secretary of War, which I told you we got about the middle of July—July 13th, I think.

Mr. McKENZIE. Now, when did you first come in touch with the Muscle Shoals proposition, the cyanamid proposition, and the Alabama Power Co. proposition? I want to know first when.

Colonel JOYES. In September of 1917, pursuant to the general examination of the possible processes of fixation of which I have spoken to you, I decided that we would like to know a little more about the cyanamid process than we had found of record, and I had my office get in touch with Mr. Washburn, of the Cyanamid Co., telling him we would like to know a little more about it, and should like to hear a little from him as to its possibilities and so on, and people from my office had one or two interviews with him, and somewhere along in that time I met him, but the talk with him over the situation was mostly done, I think, by Colonel White, who is the head of the chemical engineering department of the University of Michigan now and before the war, and also by Captain Gaillard here. Then coming out of that we thought it well to have an explicit statement from the Cyanamid Co. as to what they would do in case we needed them, and I had such a letter from them, making a specific statement as to the general character of the terms upon which they would undertake to build a plant for the United States. That was some time prior to the date, October 29, that I cited to you as the first proposal for the Muscle Shoals plant, because it was not a proposal specifically for the Muscle Shoals plant, this earlier one, nor was it one for exactly that type or size of plant. You get the difference I am trying to make clear there?

Mr. McKENZIE. Yes.

Colonel JOYES. That was the situation then.

Mr. McKENZIE. Now, you had been in charge of this matter from the latter part of May until September. Had you had the matter up with anyone else other than Mr. Washburn prior to that time?

Colonel JOYES. We had conversations with a great many people as to different processes. I had had, of course, some conversations or talks about the cyanamid as well as other processes with different people.

Mr. McKENZIE. Up to that time had you visited Muscle Shoals or the Warrior steam plant?

Colonel JOYES. Not the Warrior steam plant, sir, at all, but I had visited Muscle Shoals.

Mr. McKENZIE. When?

Colonel JOYES. Some time probably in July or August. The way of that was this: I was hunting for a suitable place to build the first nitrate plant—just that—and I had such people as I could get hold of, as I was building up my organization, and I would send them out on the road to look at any place we thought at all promising, and when they got some place they thought would be worth while, I would go down and inspect it. In the course of that period I made probably three or four trips myself to see places that had been scouted out. We started first to try to find a site for that plant in the western end of Virginia, which was the section particularly pointed out by the Nitrates Commission, for various reasons, but mainly because of its proximity to the sulphuric acid plant of the General Chemical Co., at Pulaski. That was the main reason. We tried hard to get one around there, but it was a very mountainous country, very uneven, and it was difficult to find an area suited for our work, etc. So we gradually went on down until we got down as far as Muscle Shoals.

Mr. McKENZIE. And you visited Muscle Shoals in July?

Colonel JOYES. Somewhere along there.

Mr. McKENZIE. And then along in September or October you sent for Mr. Washburn, as I understand you?

Colonel JOYES. Yes.

Mr. McKENZIE. And then you entered into negotiations with Mr. Washburn?

Colonel JOYES. Yes.

Mr. McKENZIE. Did he represent the Alabama Power Co. at that time?

Colonel JOYES. He did not, sir.

Mr. McKENZIE. He represented the American Cyanamid Co.?

Colonel JOYES. The American Cyanamid Co.

Mr. McKENZIE. And that had to do only with the Muscle Shoals proposition?

Colonel JOYES. Yes, sir; the nitrate plant to be built at Muscle Shoals.

Mr. McKENZIE. Now, then, when did you come in touch with the representatives of the Alabama Power Co.?

Colonel JOYES. I think absolutely the first point of contact with them was their proposal of November 6, I think, 1917. [Witness subsequently recalls a letter dated Nov. 1, 1917.] It has been read and put in the record, which came, I am sure, before I had seen any of the officials of the Alabama Power Co. even, or any of their properties, or anything, and then following that we had some conversation with them, which I do not think began until the latter part of November or early in December—somewhere along around there.

Mr. McKENZIE. At that time had you decided to develop Muscle Shoals through the American Cyanamid Co.?

Colonel JOYES. I do not like to concur in the use of that expression, "develop Muscle Shoals," but at that time——

Mr. McKENZIE (interposing). Well, that may be a wrong term.

Colonel JOYES. At the time I received the proposal from the Alabama Power Co. we had not decided to do so, because that was dated November 6, and received a couple of days later, and we did not decide until the meeting of November 13 to accept the Cyanamid Co.'s offer and to build the nitrate plant at Muscle Shoals. The reason I object to the use of the words "develop Muscle Shoals" is because that takes us into the civil engineering part of it, with which I had no connection whatever, the dam and the water-power development.

Mr. McKENZIE. Then, if I understand your testimony, you accepted the offer of the Alabama Power Co. first.

Colonel JOYES. No, sir: we received it, but did not accept it.

Mr. McKENZIE. Then you accepted the proposition of the American Cyanamid Co. along in the afternoon, was it?

Colonel JOYES. About midnight, November 13.

Mr. McKENZIE. Then when did you accept the Alabama Power Co. proposition?

Colonel JOYES. The only acceptance of it or the only thing that could be called an acceptance of it were the purchase orders I wrote on December 7, 1917.

Mr. McKENZIE. That was some time afterwards.

Colonel JOYES. Yes, sir.

Mr. McKENZIE. At the time you were having this interview or conversation or conference, whatever you might term it, with the American Cyanamid Co., did you at that time have in mind the taking over of the Alabama Power Co.?

Colonel JOYES. We had it in our minds that in order to carry out the plans that we were considering with the American Cyanamid Co., we would have to make some provision for getting the power for the first half production of the nitrate plant from the Alabama Power Co. There was no other place to get it.

Mr. McKENZIE. And that would be 55,000 tons or thereabouts.

Colonel JOYES. That would be the production of ammonium nitrate from the nitrate plant and the power for that was variously estimated in those days. There was some uncertainty about it, but we figured from thirty to thirty-five thousand kilowatts would carry us through at that time.

Mr. McKENZIE. At that time you did not have the Haber process in mind, when you were having this conference?

Colonel JOYES. We had it very prominently in mind, because we were building a plant to use it—a slight variant of the Haber process—but we did not contemplate the use of it for the war needs which were then being stated to us as so urgent, because we knew and we were getting to know more and more every day that we could not reply upon it being in production at any given, definite time.

Mr. McKENZIE. Who was at the head of the War Industries Board at that time, Colonel?

Colonel JOYES. The man who was generally recognized as the active head, I believe, was Mr. Baruch.

Mr. McKENZIE. Mr. Barney Baruch? Did you have any conversation with him about this matter?

Colonel JOYES. Yes; I had quite a few conversations with him and with his technical assistants. He was present at several of the conferences in the office of the Chief of Ordnance at which the several successive proposals of the American Cyanamid Co. were considered, from October 29 to November 13, 1917. Furthermore, he introduced me to the ruling board or the clearance committee, or whatever it was called, the committee which had to clear any big project, in the War Industries Board, when we presented this proposition of the American Cyanamid Co. That was, I think, on or about the 14th or 15th of November, 1917, after General Crozier, in his office and with this advice, had decided to take it, and then it had to go and be cleared through the War Industries Board. I took it up and Mr. Baruch went in with me and presented the matter in my presence to this board, the War Industries Board, and they had some discussion of it. It was put to a vote and approved.

Mr. McKENZIE. Now, Colonel, at that time, of course, you have stated you had in mind the development of the cyanamid process at Muscle Shoals and that the Alabama Power Co. was a secondary consideration from which plant you expected to get a certain amount of power to aid you in the initial manufacture of one-half the capacity of the plant.

Colonel JOYES. Yes, sir.

Mr. McKENZIE. If I understood your testimony this morning, you stated that you did not feel disposed to take over the plant of the Alabama Power Co. at that time, which would disturb them in their sale of their product to their patrons or customers.

Colonel JOYES. It was essentially like that, only it was not consideration for their feelings or their pocketbooks that kept us from doing it. It was a consideration of what complications would arise and what we would get the United States into. Of course, we considered everybody's rights and we did not want to go in and disturb anybody in his business if it could be avoided; but if it was essential, and if it was going to be advantageous to the Government, we would not have hestated a moment.

Mr. McKENZIE. Now, Colonel, you were familiar with what was going on at that time all over the country, were you not?

Colonel JOYES. Yes, sir.

Mr. McKENZIE. That thousands of acres of farms were being taken and just blanket authority given almost over entire counties.

Colonel JOYES. Yes, sir.

Mr. McKENZIE. And the rights of the people just simply set at naught because it was justifiable on account of the fact that we were in war. Is not that true?

Colonel JOYES. That is true; yes, sir.

Mr. McKENZIE. Now, then, you were also aware of the fact, were you not, Colonel, at that time, that Mr. Baruch as president of the War Industries Board was also in charge of the priorities board?

Colonel JOYES. Perfectly.

Mr. McKENZIE. And that he stated in his testimony that a citizen could not even get a piece of zinc to fix up his kitchen sink without a priority order?

Colonel JOYES. Yes; that was rather to make it striking; he did not mean it literally; but the idea is perfectly sound.

Mr. McKENZIE. He was all-powerful?

Colonel JOYES. Quite right.

Mr. McKENZIE. He had absolute power; more power than any man has ever exercised in this country. Is not that true?

Colonel JOYES. Yes, sir.

Mr. McKENZIE. Now, then, we come to the Alabama Power Co., and you say you wanted that power to help develop the first unit at Muscle Shoals; but instead of taking the strong arm of Mr. Baruch and reaching out and putting it on that plant and saying: "The Government needs this power," what did you do?

Colonel JOYES. I will tell you what I did in just a moment, and in the meanwhile you will remember that this morning I told you that when the law was passed that permitted us to take over any lands——

Mr. McKENZIE (interposing). Well, we did take lands, however?

Colonel JOYES. The first law that permitted us to take over lands or commandeer lands for anything except military camps was passed on April 11, 1918. For military camps and the like we could take lands. You gentlemen had passed a law permitting us to do that in July, 1917. You did not do it for any of the munitions production at all until April, 1918. Again, we come to the matter of commandeering supplies, and the national defense act of 1916 allowed us to commandeer supplies.

Mr. McKENZIE. And plants, did it not?

Colonel JOYES. But let us look at the language of that act. I have it here, section 120. This is a copy with all the corrections to date, but the index shows that this is just exactly as it was originally passed:

"SEC. 120. Purchase or procurement of military supplies in time of actual or imminent war: The President in time of war or when war is imminent is empowered, through the head of any department of the Government, in addition to the present authorized methods of purchase or procurement, to place an order with any individual, firm, association, company, corporation, or organized manufacturing industry for such product or material as may be required," etc.

Now, there was a great fight over that language in 1917, and I remember distinctly hearing a lot of discussion between lawyers and officers of the Government as to whether power could be considered "product or material," as expressed in the language of that law, and the general consensus of opinion was adverse. I am speaking of the period of 1917, and I remember hearing a number of discussions and I remember getting, verbally, opinions from people in position of authority or in a position to know, at least, who told me that you could not consider power a product or material. Later, they did.

Mr. McKENZIE. Colonel, I do not want to weary you.

Colonel JOYES. That is all right.

Mr. McKENZIE. But I just want to get a few of these facts.

Colonel JOYES. I think that is a very pertinent point, a very pertinent point.

Mr. McKENZIE. What was the capacity of that Warrior plant, in kilowatts or in horsepower.

Colonel JOYES. The plant that the Alabama Power Co. had, the steam power plant on the Black Warrior River, was generally called a 20,000-kilowatt plant. That means that running about as it would be expected to run in service it would deliver about that amount of power continuously, capable of going perhaps a little over.

Mr. McKENZIE. Would that have furnished you sufficient power to go on with the construction at Muscle Shoals?

Colonel JOYES. Oh, if we had that working for us it would have been very useful in the construction period and would have given us a considerable portion of what we wanted for our first production at the Muscle Shoals plant; but we did not have the call upon that without taking it away from other people.

Mr. McKENZIE. That is the point I am getting at.

Colonel JOYES. When we talk about that steam-power plant at the Warrior, you really can not divorce that from its function or its place in the system of

the Alabama Power Co.. The company, of course, had water power—some 60,000 to 70,000 horsepower—and they aimed to sell water power whenever the river was running enough to give it. Then, like all other power companies with run-of-the-river power, they had to have steam stand-by plants to bolster that up, and when the river was only running about 15,000 kilowatts, say, and they had contracts for 35,000 kilowatts that they had to meet, then they would start up this steam plant on the Warrior and supply the other 20,000. That is how it was run and organized.

Mr. McKENZIE. What I am trying to get at is your justification of the procedure in connection with this plant, having in mind what was happening all over the country in other places. For instance, men were prevented from using their automobiles on Sundays in order to save gasoline and we were compelled to eat black bread in order to conserve flour and everybody was discommoded in one way or another, and at the same time, I want to know your reason why it was not just as fair to say to the Alabama Power Co., "We want the use of your power for so long a time while we develop power at Muscle Shoals," and, of course, they would have received compensation for it?

Colonel JOYES. There was not the slightest hesitation to do that, but they could not make any additional power, any more than they had facilities to make.

Mr. McKENZIE. I understand that.

Colonel JOYES. And what we took from them was not taken from them but taken from their customers. We had a list of their customers and looked them over and found that such a great proportion of those customers were businesses that were essential to the war, that it would not have been justifiable to stop the power for them. For instance, there were all the steel mills at Birmingham—I do not mean all of them, but many of them—that took the power, and there were ferromanganese plants, and ferromanganese was one article of great stringency, and I think it had about one of the highest priorities of any branch of production, and there were other things along that line. Then there were certain other things, some of the cities depended upon it for their light and essential power of that nature, and altogether we thought there were too many of those things to make it possible for us to interfere with that supply and that we had to provide some additional facilities.

Mr. McKENZIE. Now, you built a transmission line and you got some power over that to be utilized in the construction at Muscle Shoals. Is not that true?

Colonel JOYES. Yes sir; it was ready in the spring of 1918.

Mr. McKENZIE. In other words, you got whatever the Alabama Power Co. did not have a market for down in Alabama?

Colonel JOYES. Provided we needed it.

Mr. McKENZIE. Provided you needed it; yes; but the thing I would like to have you explain a little further, if you can, is the sacred rights enjoyed by these people down there over the other people in the country, and why you did not exercise the power which Mr. Baruch said he had, to simply put the strong arm of the Government on that plant and utilize it to such extent as the Government needed it.

Colonel JOYES. I have told you, sir. that we could, although there might not be laws for it, and we were not hesitating to do that a moment, so far as the power company was concerned, but it was not taking it away from them, it was taking it away from the industries which had a high priority, and we could not take it away from those industries. That is what it would have meant if we took the power from the Alabama Power Co. system without providing some additional facilities. Understand it might have been done at certain periods of the year, and it was so represented to us by the Alabama Powr Co. We saw ourselves from an analysis of their records, all of which we had and looked over carefully, that at certain periods of the year they had a surplus of power and plenty of it, and we could have had it without a whimper and without hurting anybody at all. There was some more we could have taken without hurting the essential industries, but that was only for a brief period, and if we went in to rely on that and got our processes working the first thing we would know we would be up against a period when the river was low and there would not be any way for us to get power except then to take it away from ferromanganese and steel and some other things, and that was not a tolerable situation.

Mr. McKENZIE. At that time the Alabama Power Co. had a modestly constructed plant of about 100 feet square, did it not?

Colonel JOYES. So far as the power house goes, yes.

Mr. McKENZIE. A brick building.

Colonel JOYES. A brick building.

Mr. McKENZIE. What was the size of the building you constructed down there and what was the character of the construction?

Colonel JOYES. Something like the same.

Mr. McKENZIE. The same size?

Colonel JOYES. Something like it; a little larger.

Mr. McKENZIE. And permanently built?

Colonel JOYES. It was of brick construction, brick walls, steel to support the roof, etc., about what you have got to put up to put in modern power machinery. However, we called it temporary construction.

Mr. McKENZIE. I am not criticizing the construction.

Colonel JOYES. We called it temporary because we said we were making a temporary use of the land. There was a reason for that which I think it is well to state here. We knew the Alabama Power Co. was bonded pretty heavily and we knew that if we went in there and took the temporary use of their land, essentially as a lease, we were in some danger that our property might become subject to the lien of the previous creditors, and we did everything we could to safeguard against that, according to the best advices we had, and you will notice in the contract, in one place, we state that everything we put in there, on the land of the Alabama Power Co., is to be regarded as "personalty" and not subject to liens, etc. That was the reason for that, and that is why I want to be rather particular about saying that we stipulated that our structures should be regarded as temporary and as personalty.

Mr. McKENZIE. You expected only to use this as a war activity so far as the Government was concerned?

Colonel JOYES. That was our reason for putting it in, sir; and yet we drew the contract for power for 10 years. We did not want to be in the position that if a need should exist the Government would be debarred from having power from that plant which it had built, so we proceeded to tie it up tight so that we could get our power for 10 years, if we wanted it.

Mr. McKENZIE. Now, Colonel, in order that I may distinctly understand you and be sure that there was not anything put over on you, and you have stated you approved all that was done down there, did you give your approval to the construction of 12 dwellings down there at a cost of $5,000 apiece?

Colonel JOYES. Yes.

Mr. McKENZIE. Permanent dwellings?

Colonel JOYES. They were permanent in type but they were like all the rest, they were denominated as temporary.

Mr. McKENZIE. They would last for years, would they not?

Colonel JOYES. They would last for years; yes, sir.

Mr. McKENZIE. You also built some 20-odd semipermanent structures?

Colonel JOYES. Yes, sir.

Mr. McKENZIE. And you also built a hospital which was to have 30 beds in it?

Colonel JOYES. Yes, sir; a simple frame building.

Mr. McKENZIE. And a moving picture show building?

Colonel JOYES. Yes, sir.

Mr. McKENZIE. And did all of those things have your approval?

Colonel JOYES. Yes, sir.

Mr. McKENZIE. And this plant is situated 9 miles out from the railroad in a rather deserted sort of a place, is it not?

Colonel JOYES. Yes, sir; at the mouth of the coal mine, as they say down there. It is usually regarded as an ideal situation for a power plant.

Mr. McKENZIE. Do you contend those things were all necessary for the Government?

Colonel JOYES. I believe so, or I should not have approved them, sir. Of course, people might argue about them for a long time and all that, but you know there was a great deal of talk along in 1917, and if you will take up some of the old newspapers of that period you will find how the Government officers were criticised for not providing enough amusements and comforts and medical treatment for the workers on the plants, and this, that, and the other thing, so as to reduce the turnover—and there was a lot of that. However that is, I say. I think that a good deal of that sort of thing that was generally done ought to be unnecessary, but the situation was such you had to go into it and do it if you wanted your work done.

Mr. McKENZIE. Colonel, you have stated that in this contract with the Alabama Power Co., you felt you were conserving the interests of the Government.

Colonel JOYES. Yes, sir; that was our whole object, and we think we accomplished it.

Mr. McKENZIE. And you have also stated here this morning that in the month of June, I believe, or some month in the early part of 1918, a law was passed which would enable you to buy property.

Colonel JOYES. Yes, sir; April 11, 1918.

Mr. McKENZIE. The contract with the Alabama Power Co. was not signed until the fall of 1918, after the enactment of that law?

Colonel JOYES. Yes.

Mr. McKENZIE. Now, do you contend that it would not have been possible for you, as the representative of the Government, to have had a provision in that contract that the Government would have the right to buy the portion of the plant belonging to the Alabama Power Co. or the Alabama Power Co. have the right to buy that of the Government; in other words, have a reciprocal contract and in case they could not have agreed upon the price, that then arbitrators might come in and fix the price? Do you contend that you could not have put in that sort of a provision in order to protect the Government?

Colonel JOYES. I could have stood out for that sort of a provision if I had thought it was proper and right and advisable to do it. Unquestionably, after that law was passed, I could have done it, but there were a number of things that argued against it aside altogether from the inclination of the power company to agree to it. There was the question of more than the land involved; there was the question of the practicability of the operation of two separate establishments down there practically in the same kitchen. It would be like two people cooking in the same kitchen. That is about what it would have amounted to, and it did not seem to me to be a feasible, reasonable set-up. Furthermore, at that time we had gone along so long under a more or less reasonable, temporary working basis, which was based and rested primarily upon my original order which said that we wanted the temporary use of their land, it was an implied contract, and there was that matter to be considered. I would not have thought it exactly good faith, so far as that went, which might not have prevented my doing it if I thought it strictly advisable, but I thought that as the Government had been obliged to go down there and put in that power plant, the very best proposition that they could get hold of was to get the people who could make good use of it tied up so that they would have to buy it, and I think we have done that.

Mr. McKENZIE. Now, Colonel, this is my last question: If you at that time could have looked down through the coming months to this present moment you can see where such a provision as that or something like that would have saved our Government considerable embarrassment at this time?

Colonel JOYES. I do not see that, sir. I would say that we were not looking for embarrassments or looking to avoid embarrassments; we were looking to see what we could do to protect the physical property and assets of the United States and its equities, and we think we did that, and that is the point we were after. We never contemplated for the sake of some other interest anybody would ever wish to take one man's property from him and hand it to somebody else, and that statement is made with no impertinent reflection upon any particular offer or anything of the kind, but it is the situation. We were looking out to protect the money we had to spend, and just that.

Mr. JAMES. Colonel, you had some trouble doing business with both the Alabama Power Co. and the American Cyanamid Co., did you not?

Colonel JOYES. We did not have altogether complete harmony at all times; no, sir.

Mr. JAMES. And frequently, in order to do business with the American Cyanamid Co., you had to follow along with their views?

Colonel JOYES. Oh, yes, sir; to get the results we were after.

Mr. JAMES. What is the date of that first allotment of $300,000 that was made?

Colonel JOYES. I think it was $200,000, but the amount is immaterial. I can give you that, sir.

Mr. JAMES. I mean for nitrate plant No. 2.

Colonel JOYES. On November 23, 1917, the sum of $200,000, out of the $20,000,000 carried by section 124 of the national defense act, was allotted for the purpose of purchasing the site for the No. 2 nitrate plant. That was allotted for

the President on that day, and I got it within a few days thereafter. The exact date of that, I think, would not be necessary, but it was within a few days thereafter.

Mr. JAMES. When was the first payment due on the land purchased?

Colonel JOYES. No definite date ever agreed upon for that, sir. When we went down there we took over the land. We marked out what we wanted and walked around and then a local board was established to go out and see the owners.

Mr. JAMES. That was the air nitrates plant.

Colonel JOYES (continuing). We told them to get busy and get their evidence of title in and to arrive at a price that they thought was reasonable and see wether we could accept it or whether we would have to condemn or try to condemn. We were only talking about condemning in those days, because we had no authority to condemn, but anyway we talked it to them. It takes a long, long time always to get a proper certificate of title, and down there it seemed as if it took an interminable time, because the people who were undertaking to handle the business for us were trying to handle it all in a lump, and we could not get anything through to the point where we could pay for it. People came to us in great hardship, apparently, for money. They had been run out of their homes and they wanted the money and we could not draw a cent for them, because we had not got sufficient proof that they were the clear owners to pass title. That was a year after that time.

Mr. JAMES. Are you talking now about the nitrate plant No. 1 or No. 2?

Colonel JOYES. I am talking about No. 2, sir. The same thing would almost apply to No. 1, but we had a little less trouble there because I started that in early and all the different boards for keeping control of this, that and the other thing had not been organized, and I got a little bit the jump on them and so I handled it with my own people, and I was able to push that a little better, and my payments were made there a little more promptly than they were made through the regular channels on the other plant.

Mr. JAMES. It was about November 23, 1917, that you started to tell the people down there that if they did not turn over the land for a site for nitrate plant No. 2, you would condemn their land?

Colonel JOYES. We did not ask them to turn it over. We went in and took it. We asked them to agree to a reasonable price, and most of them did. That was largely looked out for by some of the local interests around there, the associations and so forth. They generally saw that a reasonable price was stated.

Mr. JAMES. If the payments had been made at that time, they would have come out of the national defense act, would they not?

Colonel JOYES. I think we probably would have paid them out of that because we had nothing else that we thought we could pay them out of.

Mr. JAMES. And if the money had been paid at that time all the sites would have been under the national defense act?

Colonel JOYES. Yes, sir.

Mr. JAMES. That was your intention at that time?

Colonel JOYES. That was the intention at that time, sir.

Mr. JAMES. But afterwards you found out, in 1919, that you could do it in some other way.

Colonel JOYES. Yes, sir.

Mr. JAMES. Do you figure that that kind of bookkeeping will nullify the national defense act when you purchased this ground with the intention of taking it out of the national defense act.

Colonel JOYES. I do not think I quite get your point, If I do, you mean why did I change my mind or change the plan from the first provision that was made.

Mr. JAMES. I know why you changed your mind. If the land was paid for in November, 1917, it would have been paid for out of money allotted you out of the national defense act.

Colonel JOYES. Probably; yes, sir.

Mr. JAMES. But you let the matter drift and then on January 20, 1919, you made a journal entry taking it out of some other fund instead of the national defense act.

Colonel JOYES. It was a different thing from a journal entry. What I had done therefore had been simply to carry a certain fund in my ledger on the credit side and I had never spent any of it, and before I got ready to spend it, or before I was able to spend it, then I had another account to charge it to. It never was paid out and then charged over again from account to account; no.

Mr. JAMES. Was there no money paid on any of that land until 1919?

Colonel JOYES. That is my remembrance of it, sir, and that can easily be verified by an actual examination of the books which, of course, would be much more reliable than my remembrance at this time. I am quite sure of it but I think we could have the people who are in charge of the books now go right over them and look it up and give you a specific communication about it. That would be the best way. I am confident of it.

The CHAIRMAN. Who has charge of those books now?

Colonel JOYES. Major Burns. He was here this morning but is not here now.

Captain GAILLARD. I am from this office and I will get that information.

The CHAIRMAN. Will you kindly let the committee know about that.

Captain GAILLARD. Yes, sir.

MARCH 13, 1919.

Memorandum for the Secretary of War:

I hereby authorize and direct the following revocation and allotments of funds appropriated by the Congress in the "section 124, nitrate supply" of the act approved June 3, 1916, namely:

Revoked:

The sums allotted by me Nov. 27, 1917, and Mar. 2, 1918, for the purchase of a site for an ammonium nitrate factory, aggregating $350,000

Allotted for use by the Secretary of War:

(*a*) For the purchase of United States patents protecting processes incident to nitrogen fixation, etc 10,000

(*b*) For the active prosecution of investigation of processes for the industrial production of nitrate compounds useful in the manufacture of explosives or fertilizers 340,000

Approved April 8, 1919.

WOODROW WILSON,
President.

A certified true copy: 4–30–19.

P. B. MCCONVILLE,
Lieutenant, Ordnance Department, United States Army.

A true copy of a certified copy, signed by P. B. McConville, lieutenant, Ordnance Department, United States Army.

G. B. ATTERSALL.

Purchase of site for United States nitrate plant No. 2, "Nitrate Plants, Secretary of War, allotment F."

Date.	Item.	Procurement request No.	Apportionment.
1919.			
Feb. 4	P. R. 117960	2487	$350,000
May 10	Revocation nitrate No. 27 F 112.4 (2878)	2487	350,000

A true copy of a page for the ledger of the nitrate division.

G. B. ATTERSALL.

March 11, 1921.

Mr. KEARNS, At the time you entered into negotiations with the Alabama Power Co. did you have the right to condemn the land?

Colonel JOYES. None that we could find possible, sir.

Mr. KEARNS. Then that is the reason you assign why you did not condemn the property?

Colonel JOYES. That was only one of the reasons, sir. That was one reason and sufficient for that, but in addition, I did not consider that it was a practicable or a reasonable procedure on account of the physical situation and of the complications due to power contracts, and litigation.

Mr. KEARNS. Did you enter into this agreement with the Alabama Power Co. partly because you wanted the experience and advice of the members of that company?

Colonel JOYES. No, sir; I would not put it in that way. We wanted their experience and advice in the actual construction work, yes.

Mr. KEARNS. And that is what I mean.

Colonel JOYES. Yes; but we could have hired an engineering firm for that, but it was much more desirable to be done by them, and especially, to be done by them when they were contemplating a future purchase, because that would operate to keep down expenses as much as possible and would cause everything to be done as economically as possible.

Mr. KEARNS. When you first went to Muscle Shoals for the purpose of viewing this as a future nitrate plant, what activities did you find there, Government or otherwise?

Colonel JOYES. There were no Government activities of any consequence. There was a small establishment of the Engineer Corps there handling the navigation canals. That constituted the improvement that there had been for the Muscle Shoals, and that was about all for the Government.

Mr. KEARNS. What private activity?

Colonel JOYES. There were several iron furnaces, several in Sheffield and one or more in Florence, right across the north side of the river. There were minor industries but none of any great consequence other than the iron furnaces.

Mr. KEARNS. Colonel, on the land now occupied by the Muscle Shoals project——

Colonel JOYES (interposing). The nitrate plant No. 2?

Mr. KEARNS. Yes; what activities were there, if any?

Colonel JOYES. Principally farming, cotton raising, mostly.

Mr. KEARNS. How did you get possession of that land?

Colonel JOYES. Well, we walked right on and took it, and a local committee——

Mr. KEARNS. Wait just a minute. When did you take possession of that land?

Colonel JOYES. I got down there about the 19th or 20th of November, I should say.

Mr. KEARNS. 1917.

Colonel JOYES. Yes, sir; and we went right out and looked over the ground and decided just about where the plant would necessarily sit, and about how much area we were going to want, and the Cyanamid Co. was told by me to take possession of it. There was a local association of citizens and a committee. Colonel Worthington, whom you know, was at the head of it. They said they would smooth out all the difficulties, and we essentially took possession of the land we wanted and continued our negotiations with the owners as best we could. The answer as to time, would be the latter part of November, 1917.

Mr. KEARNS. What property does the Government own in partnership or in conjunction with the Alabama Power Co.?

Colonel JOYES. What property does it own in partnership with the Alabama Power Co.?

Mr. KEARNS. Yes.

Colonel JOYES. Absolutely none, sir.

Mr. KEARNS. What properties, then, of the Alabama Power Co. has the Government invested money in—any place, except the Warrior plant and one of the transmission lines?

Colonel JOYES. For every bit of property of any shape or description for which the Government spent a cent the title is vested in the United States absolutely.

Mr. KEARNS. The title is vested in the United States?

Colonel JOYES. Absolutely.

Mr. KEARNS. How much money did the Government invest in properties that were at that time owned by the Alabama Power Co.? How much did you invest?

Colonel JOYES. I do not like that way of putting it I could not answer by agreeing with that language. We did not invest in any property of the Alabama Power Co.

Mr. KEARNS. The Alabama Power Co.——

Colonel JOYES (interposing). I know what you mean and I am only trying to be exact in my answer.

Mr. KEARNS. Then why not answer it?

Colonel JOYES. We put in the neighborhood of a little over $5,000,000 into equipment and structures, which under the contract are denominated per-

sonalty and temporary, which are located on land belonging to the Alabama Power Co., or land over which the Alabama Power Co. owns an easement. I think that is as good a reply as I can give you on that.

Mr. KEARNS. The real estate title, however, is in the name of the Alabama Power Co. at this time; is it not?

Colonel JOYES. Yes, sir; but we are not claiming any real estate at all. We are in the position of a man who owns an automobile in another man's garage.

Mr. KEARNS. You claim that you have title to those buildings that you constructed——

Colonel JOYES. Absolutely.

Mr. KEARNS (continuing). With United States money?

Colonel JOYES. Absolutely. We have the power company's statement of that, the power company's agreement to the fact that that shall always be regarded as personalty and not subject to any lien they may set up, etc., and so far as it is possible shall be protected against former liens, etc. Furthermore, all property is required to be prominently marked "United States property," and is so marked.

Mr. KEARNS. You had an agreement, or you had a clause in your agreement or contract with the Alabama Power Co., that when you were through with this property you were to sell it to the Alabama Power Co. at a fair value; is that right?

Colonel JOYES. Essentially correct, sir. The language of the contract, of course, will throw certain shades of meaning on that, but that is essentially the meaning of it.

Mr. KEARNS. The contract recites a fair value, does it not?

Colonel JOYES. I do not know. I will have to look it up.

Mr. KEARNS. Well, it does.

Colonel JOYES. I think it does. I think it uses that expression.

Mr. KEARNS. Under the terms of this contract, were the arbitrators to determine what a fair value would be?

Colonel JOYES. Yes, sir. I had better answer those two questions together, right out of the language of the contract, to be sure that there is no misinformation given to you. In the first section of article 22, providing for the sale to or purchase by the contractor, article 1 says, "at the value fixed by arbitration as hereinafter provided." The second section says, "actual cost to the United States of the Warrior extension"; section 3 says, "actual cost of said property"; section 4 says, "actual cost to the United States of the Warrior extension and Warrior substation"; section 5—there was no value stated in section 5, because that was a provision for removal by another than the United States; section 6, no statement as to the value there; section 7 was also a removal proposition, and nothing said about the value until you get down to the last line, which is the alternative, and there it says, "fair value as fixed by arbitration." There it says "fair value."

Mr. KEARNS. That is what I want your construction of. What did you mean by that?

Colonel JOYES. All right, sir; I will get to that in a moment.

Mr. KEARNS. Let us have that question answered here; that is what I want.

Colonel JOYES. All right, sir; I get your point.

Mr. KEARNS. When you were through with this property, the Alabama Power Co. would have the option to buy it, but it must buy it at the fair value.

Colonel JOYES. Yes, sir.

Mr. KEARNS. Fixed by arbitrators.

Colonel JOYES. Yes, sir.

Mr. KEARNS. Now, suppose the arbitrators would fix a value below what the Government thought its interest was worth, would it not have a right to go into the court to construe what was a fair value?

Colonel JOYES. Yes; as to the right to go into court. I have not anything to help you out with on that but my understanding.

Mr. KEARNS. How would you determine then what the fair value would be?

Colonel JOYES. I will tell you what I think the fair value would be, and I think I have something to back that up. It would be somewhat along these lines. The arbitrators would try to decide what would be the cost at the time of the appraisal or arbitration.

Mr. KEARNS. Yes.

Colonel JOYES. What would be the cost under the conditions prevailing then of reproducing the plant in toto as it stood. That would be the fair reproduction value, as it would be technically called, and the reproduction value would then be subject, under the usual rules of construction, to a deduction to allow for the wear and tear of the plant due to the use which it had already had. In other words, take the present day, for example, we would go out and find out, if we were arbitrating it, what would be the cost of building that plant right now, with present wages and present costs of materials. Suppose it would amount to $3,000,000. Then we would say, "How long has it been in service," and let us say three or four years, or whatever it might be, and we will say a plant of this nature by the established rules depreciates so much per cent per annum, and suppose we would say 7 or 8 per cent per annum, three times that would be 21 or 24 per cent, and we would lop off 21 or 24 per cent of our $3,000,000, and then we would have the fair residual value at this time. Now, I think it would also be in order for the arbitrators to consider whether the product the plant was to make was still in demand in the market. In this case, I do not see how they could fail to say that there was a splendid demand for it, and yet in some other cases, for example, steel, if somebody had a steel furnace made on this same set-up, they might very well knock something off of that fair reproduction value because of the fact that the market was so bad. You see my point there.

Mr. KEARNS. Yes.

Colonel JOYES. And I think that is a legitimate rule of procedure. I think it is one that would be followed and there would be ample justification and precedent for it.

Mr. KEARNS. Do you know anything about the Ford offer for this property down there?

Colonel JOYES. I have read it as it appeared in the hearings, sir.

Mr. KEARNS. Is it necessary for Ford to have the Warrior plant, or the property that belongs to the Alabama Power Co., in order to operate his project down there.

Colonel JOYES. I do not so consider it. To develop the full product of the nitrate plant No. 2 as we calculated it and designed it would require more power than is now provided for in the equipment of the power plant at No. 2 nitrate plant, but having that in mind during the construction period, and desiring to have the plant itself as free as possible of any interruption from the outside, and not dependent upon a long transmission line or anything of that kind, and furthermore, because we thought we could make the power cheaper in the one plant at Muscle Shoals if we continued to operate it for any considerable time, we changed the plant of the power house at the No. 2 nitrate plant before it got very far going; that is, in the early part of 1918, and in addition to building it with ample room for the machinery that is now in it; that is, 60,000 kilowatt turbo generators, we left plenty of room there for an additional power unit of 30,000 kilowatts or perhaps more, which would give the plant ample power machinery for all its rated capacity, and we put in three additional boilers also, so that there would be ample steam to take care of that. The plant is liberally boilered for not only the unit that is now in place but for a 30,000 kilowatt unit in addition, I believe. I am not a power expert, but I have heard it discussed by those who are, and they told me that they considered that it was liberally boilered for an ultimate 90,000 kilowatts. Furthermore, there is the water power expected from the Tennessee River.

Mr. KEARNS. Now, there is just one other question, Colonel, I want to ask you, and it is foreign to the questions I have been asking. This may be in the record many times, but I do not recall it. Under the contract that you entered into with the Alabama Power Co., you were to pay 6½ mills per kilowatt hour for power, were you not?

Colonel JOYES. We were; yes, sir.

Mr. KEARNS. How did that compare with the price the Alabama Power Co. was charging its other customers?

Colonel JOYES. I could not give you a comparison at this moment that would be accurate enough to be worth anything, but I am satisfied that it was all right. I think it was cheap compared with their general schedule. It is a very difficult and complex matter to compare those rates, and I can not say at the moment really anything that would be worth while. You see it depends upon the demand, and it depends upon the quantity, etc. When I say the demand, I mean we are flatly and absolutely entitled to 30,000 kilowatts there right along. Now, we may take 5,000, we may take 25,000, and we have no restrictions on that at all. That is a very favorable point for the United States. We can demand up to 30,000 kilowatts any time we want it, and insist upon

having it, but we are not tied up to take any considerable amount. We may take at the rate of 5,000 at this minute and later on in the afternoon we may be taking 25,000. Now, the private customer would pay for that and would pay for it hard. I have seen power contracts, I was looking at three of them the other day and made some notes on them to refresh my recollection, if necessary, and they were contracts where the Government assisted in financing additions to the plants. There was the West Penn, the Duquesne and another company, the name of which I have forgotten.

Their prices were stated and two of them were 7.3 mills and one of them 8 mills per kilowatt hour, but in each of the three cases it was stated that that was the price on a 100 per cent load factor. Now, that means that if the United States has a right to take 30,000 kilowatts it has got to take as much as 30,000 kilowatts or else it pays higher for it, and those contracts stated that if that load factor was not lived up to—if the United States took power at any other load factor, then they would pay such higher rate for the power other than that stated in their contract as the published schedules provided for the reduced load factor. Now, that is the usual practice because, of course, if you have money tied up in a dam, you have got to figure on selling and making contracts to sell power, and if you contract to satisfy people, according to their demands, for all your capacity, you want to sell it. It is perfectly right and proper and it is always recognized. That was the situation. There were some other provisions in our contract as to that rate, and I could not let it pass without telling you of them, while we are about it. That rate was based upon a stated cost for coal of a given quality and was liable to be changed if the coal increased in price a certain amount. Those provisions are all in the contract which you have before you and that was reasonable. Nobody could foresee what the prices were going to be for the next 10 years, and so it was left in that way. The United States has a chance to call for arbitration on that power rate, also, I believe, if the price of coal should go down.

Mr. MILLER. Colonel, you state that the first you ever heard of the Alabama Power Co. was when you returned to Washington and you ascertained that the American Cyanamid Co. was to build a plant for the Government.

Colonel JOYES. Yes, sir; except that I had heard the name.

Mr. MILLER. About when was that?

Colonel JOYES. That was about early in November. I am afraid I heard you rather incorrectly. The first I heard of the Alabama Power Co. in a business way at all was in the early part of November or the end of October.

Mr. MILLER. What year?

Colonel JOYES. 1917; when I first heard them mentioned by the American Cyanamid Co. in its propositions. I had read the name, but I had paid no attention to it before that.

Mr. MILLER. At this time there was no nitrate plant building or under construction, except the nitrate plant authorized by the national defense act of 1916.

Colonel JOYES. No. 1; yes, sir.

Mr. MILLER. It does not say No. 1 or No. 2, but simply nitrate plant.

Colonel JOYES. I understand what you mean; yes, sir; that is correct.

Mr. MILLER. There was $20,000,000 available for the construction of a nitrate plant and at the disposal of the President under that act?

Colonel JOYES. That was the original appropriation; yes, sir.

Mr. MILLER. That was long prior to our getting into the war?

Colonel JOYES. Yes, sir.

Mr. MILLER. I wish you would state where that $20,000,000 went—what is went into—that is, the original appropriation under the national defense act.

Colonel JOYES. You will understand I had not complete control of the $20,000,000.

Mr. MILLER. When you came into possession of the nitrate-production proposition?

Colonel JOYES. I can tell you this in a general way. I think you will find it has already been put in the record of this committee earlier where it was disposed of, and I am sure it is all in the record of Mr. Graham's committee. But in a general way I am right on this knowledge, that in the neighborhood of $3,000,000 or $3,500,000 was spent by me in nitrate plant No. 1, near Sheffield; some considerable portion of it, but not much in present-day figures, say, not over a million, I should say, was spent in incidental expenses of investigations here, there, and everywhere by me or my successor in the nitrate division; and about something like $14,000,000 or so was turned over

to the Engineer Corps for use on the Wilson Dam. That is about all I know at the moment or could say in answer to your question now, sir. That is essentially a broad statement; correct, but broad. Some of it is still unspent now, a little amount.

Mr. MILLER. Nitrate plant No. 1 cost in the vicinity of $13,000,000—somewhere around that sum?

Colonel JOYES. Around that, sir, meaning by that the entire establishment.

Mr. MILLER. That has a power plant connected with it, has it not?

Colonel JOYES. It has a small power plant, about 5,000 kilowatt capacity.

Mr. MILLER. Sufficient to run it?

Colonel JOYES. Sufficient to run it; planned for that. There is no use in qualifying it, conditions as to what would run it successfully were uncertain, but it was designed for that plant specifically.

Mr. MILLER. That was built some time before the plant was constructed?

Colonel JOYES. It was started in the fall of 1917.

Mr. MILLER. I have not very clearly in my mind the necessity of this Warrior extension; that is, the purpose it was to serve.

Colonel JOYES. If I do not hit the point that is bothering you, please let me know.

Mr. MILLER. I will let you know.

Colonel JOYES. The thing is this, in putting up the Muscle Shoals nitrate plant——

Mr. MILLER (interposing). Which one?

Colonel JOYES. No. 2, the only one I call the Muscle Shoals nitrate plant—we were going to have a plant to produce 110,000 tons of ammonium nitrate per year. The contractor said that he estimated or believed that he could build that plant and have it in condition to be producing at one-half its rated capacity in six months from the date of breaking ground. That does not necessarily mean a half-completed plant, but it means it would be working at the rate of one-half of its rated capacity. They said that would require, as best they could estimate it for us at that time, around 30,000 kilowatts, or a little more than that. We now think it would take a little more, but that was about what we were figuring on at that time; and the point was how to get power for that first half production six months after breaking ground for the plant. You could not build a large power plant in that time. We were convinced of that. You have too many things to do; you have the excavation of the ground and you have to make the plans, and all that sort of thing. So we were convinced that Mr. Washburn's suggestion was a very wise one—that we tap into the Alabama Power Co.'s system, where they had already some power, so that by the time our nitrate plant would be ready for its first supply they would be able to give us some power out of their system; and meanwhile, with our addition to their plant they would be prepared to make that supply continuously available to us. So we went down and contracted with them for the power, and put in the addition and the transmission line.

Mr. MILLER. Could you not have built the power plant at nitrate plant No. 2 as quickly as you could build one on the Warrior River?

Colonel JOYES. I have not the slightest doubt, if you started under the same conditions and built the same kind of a plant, that you could do that.

Mr. MILLER. You could have built the plant up there, as you subsequently did build it, just as quickly as you could have built it on the Warrior River and built 88 miles of transmission line?

Colonel JOYES. Provided you had the same kind of plant started under the same conditions. But neither of those provisos was realized.

Mr. MILLER. You say it was Mr. Washburn's suggestion that you go down there and get in connection with the Alabama Power Co.?

Colonel JOYES. That was his suggestion, sir.

Mr. MILLER. And Mr. Washburn is connected with the American Cyanamid Co., you say?

Colonel JOYES. Yes, sir.

Mr. MILLER. And likewise his company, or a subsidiary of his company, had the contract for building nitrate plant No. 2?

Colonel JOYES. Yes, sir.

Mr. MILLER. So you abided by that suggestion and went down on the Warrior River and got into negotiation with the Alabama Power Co.?

Colonel JOYES. Yes, sir.

Mr. MILLER. How many acres of land is there at the power plant, or the Warrior River power plant, owned by the Alabama Power Co., on which this Warrior plant stands?

Colonel JOYES. I do not know.

Mr. MILLER. Approximately?

Colonel JOYES. I should say in all probably they have a thousand acres or so.

Mr. MILLER. And the plant occupies but a small portion of that, I suppose?

Colonel JOYES. That is so. Of course, we spread over and touch upon quite a little piece of it. I might have brought up the plan to show you that, but here was the Alabama Power Co.'s original power plant [illustrating], and we built alongside of it, an addition to it. Then they had an outdoor electrical switching station that set over here [illustrating], and we had to put something onto that. Then we had to build some trackage around there in order to get coal into our extension and to get the ashes out of it, and then there are a number of auxiliary buildings that were about there, and they run up the hill, along in the neighborhood of one of the housing districts that the Alabama Power Co. had provided. Of course, that was the logical thing to do.

Mr. MILLER. It was necessary to repair the railroad to get into it, too, was it not?

Colonel JOYES. Yes, sir.

Mr. MILLER. You went down there and entered into this contract for the construction of the extension to their power house, an extension that was larger than their original power house?

Colonel JOYES. That is correct.

Mr. MILLER. About one-quarter larger?

Colonel JOYES. Yes, sir; about that, I should say.

Mr. MILLER. Their power house had a capacity of generating about 25,000 kilowatts, did it not?

Colonel JOYES. Somewhere in that neighborhood.

Mr. MILLER. And the one the Government erected was capable of generating about 33,000 kilowatts?

Colonel JOYES. Thirty thousand, or about that amount.

Mr. MILLER. Comparing the two plants, if we may so speak of them, the one financed by the Government and constructed by the Government was the larger one of the two?

Colonel JOYES. Yes, sir.

Mr. MILLER. In the first place you entered into a contract at 6 per cent, with a maximum commission of $225,000?

Colonel JOYES. Yes, sir.

Mr. MILLER. And we paid them $60,000 to go on their land, in the first place?

Colonel JOYES. We paid them $60.000, which was defined in the contract as overhead expenses and compensation for the use of the land and facilities, and so forth.

Mr. MILLER. Then we put in, or you say you expected originally to put in about $2,500,000?

Colonel JOYES. No, sir; I do not think I said that.

Mr. MILLER. Or $2,250,000?

Colonel JOYES. I mentioned that figure, but I do not think I said that was what we expected to put in. That figure was mentioned in the letter of the Alabama Power Co. as what they had figured they might put in an addition which they had under contemplation, and which they thought would insure a supply of power.

Mr. MILLER. Up to this time had you had any considerable experience in contracts of this character, or business negotiations of this character?

Colonel JOYES. Nothing of this character; I guess nobody had.

Mr. MILLER. Up to this time you were a novice at this kind of work?

Colonel JOYES. Yes, sir; but not in business. I have been doing a good deal of business for the Ordnance Department for a good many years.

Mr. MILLER. I mean things of this character.

Colonel JOYES. Yes, sir; this was quite a novel character of work for everybody.

Mr. MILLER. You say one of the reasons you did this was because you could not see your way clearly to acquire land. What is the sequence of time in which you acquired the land for the construction of nitrate plant No. 2 at Muscle Shoals, as compared to the time you went into this arrangement with the Alabama Power Co. on their land?

Colonel JOYES. We took the land at the nitrate plant, took possession of it, before we had gone into the Alabama power work at all.

Mr. MILLER. You had by some means or other acquired the land on which to build this nitrate plant No. 2 at Muscle Shoals?

Colonel JOYES. Yes, sir.

Mr. MILLER. But you had no means of acquiring the land on which to build this extension?

Colonel JOYES. I do not believe I said that, sir.

Mr. MILLER. I am asking you that.

Colonel JOYES. I mean to say that would be an inaccurate statement; I might have said it. The point is this: I do not mean to say it would have been an altogether, utter impossibility for me to acquire land and take it away from the Alabama Power Co., or buy it from them, provided I had used the money out of the national defense act, which I did not want to do.

And, again, there were other considerations than the actual ability to find a way to buy and pay for the land. There was the question, for one thing, whether, if we made a power house down there, Did we want to own the land? I thought not—wisely or wrongly—I thought not. I think that it was better not to be tied up with the ownership of land. And, then again, we had other things than the land to buy there. It was a question of the facilities which they had built underground, and various other things, more or less tangible, and some of them intangible, that all tied in together and gave us what we wanted there—the ability to get quickly additional facilities for producing power.

Now, another thing: There was on the transmission line a great deal of work involved to get the right of way. There were a great many ownerships and if the Government had gone down there we would have had to go ahead and dicker with the people, many people through that country, a country that was unfamiliar to us. The power company's people knew the country, they had worked through it before, and they had certain powers under the State laws to commandeer it and could get the right of way with very little trouble, and they knew how to do it, and they could get it cheap whereas it would have cost us a great deal. We would have had to build up an organization in order to do it, and we would have had some trouble about it. I do not say that is a vital reason, because trouble was a thing we did expect to take; but we had to think about what the possibilities were for timely accomplishment, and we had to give that a certain weight; that is, whether we could actually physically accomplish the job within the proper time or not.

Mr. MILLER. You contracted with the Alabama Power Co. as the agents of the United States Government to do these things, did you not?

Colonel JOYES. I did not know that we made that an agency contract; I had forgotten that, if we did. I believe we simply employed them as the contractor to build it.

Mr. MILLER. I think you will find it the way I stated.

Colonel JOYES. It may be it is an agency contract and I may be wrong. We called them contractors in the contract, I think. Are you not thinking of the Air Nitrates Corporation contract? They are agents. These people are not agents and never were; they were simply contractors. I do not think you will find the word agent in there.

Mr. MILLER. Let me refresh your memory a little bit on that.

Colonel JOYES. It may be they are and I may be wrong about it.

Mr. MILLER. Turn to article 2 of the contract.

Colonel JOYES. Article 2?

Mr. MILLER. Yes. It says: "Upon the approval of the contracting officer of said plans and specifications for the Warrior extension and the Warrior substation or any part thereof, the contractor shall as the agent for and at the expense of the United States"——

Colonel JOYES (interposing). Where is that paragraph?

Mr. MILLER. That is in article 2.

Colonel JOYES. "New facilities at Warrior station."

Mr. MILLER. Yes; the last paragraph of that article.

Colonel JOYES. I see; you are right and I am wrong about that.

Mr. MILLER. Let me call your attention to the next paragraph, article 3, which says: "The contractor shall, subject to the approval of the contracting officer, but at the sole expense of the contractor." There is a vast difference between those two.

Colonel JOYES. Yes, sir.

Mr. MILLER. Let me proceed farther in section 3, at the top of page 148 of the printed hearing, where it says, "upon the approval by the contracting officer of the said plans and specifications or any part thereof, the contractor shall as

the agent and at the expense of the United States furnish all the labor, material, tools, machinery, equipment, facilities, and supplies, and do all things necessary to clear so much of said right of way," etc.

Colonel JOYES. My memory is at fault, unquestionably. I had not remembered that there was a mention of the word "agent" in the whole contract.

Mr. MILLER. Let me refer you also to paragraph 3 of the same article, where it says, "Upon the approval by the contracting officer of such plans and specifications the contractor shall, as the agent for and at the expense of the United States, likewise construct the quarry main line on a right of way to be provided by and at the expense of the United States."

Now, everything down there, Colonel Joyes, in connection with the Warrior steam plant was on the property of the Alabama Power Co., either what it then had or what was subsequently acquired.

Colonel JOYES. Everything denominated, everything covered by the term "Warrior extension, and Warrior substation and the transmission line," because that was on their easement; but not the Muscle Shoals substation.

Mr. MILLER. No.

Colonel JOYES. That was the only exception.

Mr. MILLER. That was on our own land.

Colonel JOYES. That was on our own land, sir.

Mr. MILLER. I wonder why that was.

Colonel JOYES. That was at the Muscle Shoals end of the line. One of the substations was at the place where the power was produced and stepped up in its voltage, so it could travel along the line—like an elevator carrying the voltage up. Then, at the other end there had to be another elevator to carry it down, or step it down, and that was on our property.

Mr. MILLER. The first was on the property of the Alamaba Power Co. and the other was on the property of the United States?

Colonel JOYES. Yes; those are transformer stations where the voltage of the current was stepped up so as to travel along the line for a long distance.

Mr. MILLER. Yes; I understand all that. Do you think that was a good business proposition?

Colonel JOYES. I think so; as good as could be expected under the circumstances of the war. It was a good contract for the war period, and compared favorably with any other.

Mr. MILLER. That was your first contract; you had never had had any experience in such matters before?

Colonel JOYES. I am quite ready to admit that, but I think it was doing pretty well for the first time, however that may be.

Mr. MILLER. We may have our differences of opinion on that.

Colonel JOYES. Yes.

Mr. MILLER. I am the person who said it was an unconscionable contract.

Colonel JOYES. Very well, sir. I consider it a good one.

Mr. MILLER. So we may frankly understand each other.

Colonel JOYES. Very well, sir.

Mr. MILLER. We were going to buy this product, we put in $5,000,000, or approximately $5,000,000, and were to buy the electricity from them at a price of 6½ mills per kilowatt hour.

Colonel JOYES. Quite right, sir.

Mr. MILLER. Approximately what was the company charging other customers, so far as you know?

Colonel JOYES. I could not give you any information on that at the present moment. I have been separated from the business too long to remember it.

Mr. MILLER. You can see the deep significance of that, can you not?

Colonel JOYES. See what?

Mr. MILLER. We were simply buying electricity down there.

Colonel JOYES. Not quite that.

Mr. MILLER. What were we doing?

Colonel JOYES. Because you have other provisions in that contract, in this way. We built the plant; yes. But did we give them the free use of it? No; they rented it from us. They paid us back, or were, under the contract, to pay us back if the contract had been operative, for the supply of power; if we had not stopped, they were to pay us interest at 6 per cent per annum upon the total cost of what we had spent down there—not any estimated reduced value, but our actual expenses. They were to pay 6 per cent per annum on that. You will find that fully set down in the contract; and if you will turn to it, you will find it in article 17, "Payments by contractor."

Mr. MILLER. Now, then, that 6 per cent proposition was only payable so long as the Alabama Power Co. furnished power for those nitrate plants.

Colonel JOYES. Absolutely not both, sir; there is no mention of both nitrate plants in that connection, bearing that significance, and inevitably having that meaning. It says, "so long as the United States shall require the contractor to suppy energy to the United States for the operation of either or both of said nitrate plants"; that is a different thing. It goes on, "the contractor shall pay to the United States monthly for the use of the Warrior extension and Warrior substation interest at the rate of 6 per cent per annum upon the actual cost to the United States of said extension and substation." That is the essence of that.

Then, paragraph 2 of the same article says, "during such period as the contractor may, under the provisions of article 21, be relieved of said monthly payments the contractor shall pay to the United States monthly, in lieu of said monthly payments, one and one-half mills for each kilowatt-hour of energy produced by the contractor at the Warrior extension." Furthermore, when we were taking power from the contractor at more than $30,000 worth per month we were to receive from the contractor two mills toward the purchase price. There you have payments consisting of interest on the actual cost of the investment, and also an amortization payment; and also, the tenant, so to speak, was to attend to all the upkeep and insurance. So that essentially put them in the position of a tenant who rents from you something that you own at a fair rental for it and is therefore entitled to sell you the product of that plant just as if he owned the plant. I do not think there is any other construction to be put upon it.

Mr. MILLER. Let me read some portions of section 17. It says, "beginning at the termination of the period of the preliminary operation mentioned in article 14, and so long as the United States shall require the contractor to supply energy to the United States for the operation of either or both"——

Colonel JOYES (interposing). Either or both.

Mr. MILLER (continuing). "Of said nitrate plants, the contractor shall pay to the United States monthly for the use of the Warrior extension and Warrior substation interest at the rate of 6 per cent per annum upon the actual cost to the United States of said extension and substation." Do you mean to say that a limitation of that kind does not apply only to the period when they shall furnish power for one or both of those stations?

Colonel JOYES. I never said that.

Mr. MILLER. That is what I said.

Colonel JOYES. You said there was a limitation on there when they were to furnish power for the operation of both nitrate plants.

Mr. MILLER. Both or one of them. I said both where I should have said both or one of them.

Colonel JOYES. I have to look out what the meaning of my reply is, so that I will not be misunderstood. Let us take the language of the contract.

Mr. MILLER. We understand each other. You need not be afraid of that. I am asking you if under that contract the $30,000 a month is only payable during the period when we are furnished power for one or both of those plants?

Colonel JOYES. The $30,000 per month, which is the minimum payment which we undertake to make, is only payable when we are exercising our demand for power, and that demand may be exercised in several ways, and without remembering the exact language, I am sure the contract carries this meaning, that whatever use the United States may make of the power which it chooses to set up a demand for under this contract that would be the ruling, we would pay the $30,000 and we would get our rental back from the company. I qualify it that way, sir, because there is a provision here which we may pass over, if we wish, the right to set up a demand for that power to some other party. It was set forth in the beginning that the fundamental purpose for supplying the power was for the operation of nitrate No. 2, and naturally we had that in our minds. Whether the contracts says so or not. I think it would be quite probable that it did have some limitations to the uses of the nitrate plant, because——

Mr. MILLER (interposing). No doubt.

Colonel JOYES. No doubt—because that was what we had in our minds; and moreover, it might well have determined the terms of the contract on account of the nature of the demand which determines the cost of the power.

Mr. MILLER. I have been wondering why this was done, all of this elaborate arrangement with the Alabama Power Co., when we already had a steam power plant at plant No. 1, and we were building one at nitrate plant No. 2.

Colonel JOYES. Yes, but there is a difference between different kinds of power plants, and I will analyze them for you if you wish.

The power plant at No. 1 was a very special kind of power plant. The process required comparatively little power, it required a great deal of steam. The plant put in at No. 1 was built to make a good deal of steam and supply it, and it was a good steam plant. Now, we put in some electrical generating machinery; but it was of a kind that, whether it was wise or not to put it in that plant; and that has been questioned, and I have questioned it myself, but it is certainly not the type of machinery that would be put in for any power-producing concern. It is direct current machinery, for one thing. There is some alternating current machinery; but it is adapted for the particular needs of that plant. That is the situation there.

It was a small plant; it was not capable of expansion under advantageous circumstances at all. It was far removed from the coal mines. We had no advantage there. On the other hand we did not have the advantage of being immediately adjacent of the place where it was going to be used. It was 5 miles from plant No. 2. It was expected that that local power plant would generally always be required to serve nitrate plant No. 1. This Alabama power was specifically intended always for nitrate plant No. 2; but if we had need for it, we had the right to use it elsewhere.

Mr. MILLER. Here was a steam plant and a large generating plant. Why was the steam plant and the big electric installment not made at plant No. 2. Why were they not all kept down there?

Colonel JOYES. They were not put there at nitrate plant No. 2 because they had a start at the Warrior, and we could get it quicker in the way we did it. We were not dependent upon the completion of the Warrior extension steam plant for our first power supply from the Alabama company, nor did it turn out that way in the end. We got power from the Alabama Power Co. as soon as the transmission line was finished; in fact, before the permanent transformers were installed. We took some at low voltage for construction work, and immediately the transformers were in we had some available to run our plant. We therefore actually, as a matter of fact, had power under that contract from the Alabama Power Co. before the Warrior extension was finished. The situation was this: We tapped a system which at certain periods had an available power, and to protect our supply we had this additional Warrior extension, and the whole thing worked out as planned, so that by the time we needed power we had it to use. The reason we could put in the Warrior extension at Gorgas to do that was simply because they had a start there, and that is why it looked good to us. It was more a question of time than money, the time which would have been consumed in going down 25 or 30 feet into rock and getting a water conduit for the condensing water, and all of that sort of thing. That was all done, and it saved quite a bit of time in that work.

Mr. MILLER. By the time 30,000 or 33,000 kilowatts were to be delivered at the Muscle Shoals plant No. 2 how far along was the steam plant there at plant No. 2?

Colonel JOYES. It is rather hard to coordinate, but its main structure as a building was very far from completed. I think the outside brick walls were not up by any means. Some of the boilers were being set at that time. I think the best thing I can say to you is that it was very, very far from being completed. If we could show you the progress photographs that would be an accurate reply to your question.

Mr. MILLER. Let us take another angle of it. At the time you got 30,000 kilowatts from the Warrior plant was nitrate plant No. 2 ready for half production?

Colonel JOYES. The times are difficult to coordinate from memory. We really had our first running of the nitrate plant, the actual product coming through in October. I should say the middle of October, about, speaking from memory; that is, October, 1918.

Mr. MILLER. I am asking this question to get the sequence; that is, whether at the time the 30,000 kilowatts were delivered at nitrate plant No. 2, was the plant ready for half production? What is your memory on that?

Colonel JOYES. I should say they were just about even. Probably the availability of the power from the Alabama Power Co.'s system was earlier than the readiness of the nitrate plant to use it.

Mr. MILLER. How did the completion of the plant ready for half production compare with the completion of the steam plant at nitrate plant No. 2?

Colonel JOYES. The nitrate plant was ready for half production considerably before the power plant at No. 2 was ready.

Mr. MILLER. You mean for half production?

Colonel JOYES. Very long before, because that complicated unit, the turbo-generating unit, gave us trouble and parts of it had to be sent back to the manufacturer, and it took many months to get them back. Of course, if the war had continued it might have been hurried up some. I have not really refreshed my memory on those dates. I have been disconnected from this work for nearly two years, certainly a year and a half, and I do not want to be taken as making a definite statement about these comparative things. They can all be verified absolutely for you if you desire.

Mr. MILLER. Now let me get down to the famous paragraph 22 of the Alabama Power Co. contract, which I believe, you said worked no hardship to the United States Government.

Colonel JOYES. Yes, sir.

Mr. MILLER. Article 22 has several alternatives in it. The first of them is that the Alabama Power Co. shall have the right to purchase the property at its fair value.

Colonel JOYES. That is the first one?

Mr. MILLER. That is one of them.

Colonel JOYES. I do not think that is No. 1. No. 1 is the option of the United States.

Mr. MILLER. It says "at any time subsequent to three years after the termination of the war"; why was that put in there, "three years after the termination of the war," and then the termination of the war was to begin at the time we formally declared peace?

Colonel JOYES. Yes, sir.

Mr. MILLER. At whose suggestion was that put in, yours or the Alabama Power Co.?

Colonel JOYES. I do not know, sir. Frankly, I can not recall that.

Mr. MILLER. Subsequently, there is another paragraph by which that period can be extended two and one-half years.

Colonel JOYES. That period of three years extended two and one-half years? I do not know what you mean there.

Mr. MILLER. Yes; I think so.

Colonel JOYES. For payment?

Mr. MILLER. Payment, I believe, to be expended.

Colonel JOYES. Oh, yes.

Mr. MILLER. That is the red-hot part about buying anything.

Colonel JOYES. Yes; but you do not expect to sell a three or four million dollar property and get cash across the table.

Mr. MILLER. No; but within three years after the war came to a close certain rights accrued under article 22.

Colonel JOYES. Yes, sir; I think it comes back to me a little bit now. I can give you a surmise of the reason for that. I think it was figured that that was put in to give a chance for some little stabilization of conditions following from the war, as being a fair thing. I believe that is, essentially, the reason for it.

Mr. MILLER. Yes; and we must keep in mind also and under our eye the condition under which this $5,000,000 was put in; it was put in at a time when the War Finance Corporation would allow very few, if any, enterprises to borrow money and issue negotiable securities, etc.

Colonel JOYES. I am aware of that. At times they were giving priority to increases in power plants.

Mr. MILLER. Oh, yes; in some places.

Colonel JOYES. We had A–1 on most of ours.

Mr. MILLER. That paragraph gives the Alabama Power Co. the right to acquire this property under certain conditions, and the value of it was to be arrived at under arbitration provided for in the contract, and the payment for it.

Colonel JOYES. Yes.

Mr. MILLER. The term "fair value" has a very deep significance, Colonel. I do not know whether the technical use of it was considered when that term "fair value" was put in there.

Colonel JOYES. That was undoubtedly considered at the time.

Mr. MILLER. Anyway, that "fair value," in your judgment, was to be the fair value as a going concern, as a part of the unit of the Alabama Power Co.

Colonel JOYES. That was fair value as a going concern.

Mr. MILLER. As a part of the unit of the Alabama Power Co., or part of its generating plant.

Colonel JOYES. Yes; I think that would be a fair meaning to read into it. Whether I would be upheld in that, I do not know, but I think that is fair. It acquires a certain additional value, I think, by reason of its being tied in with the general system, and I think we will get that when it comes to the manner of settlement.

Mr. MILLER. You realize, as the world realizes, that this Warrior extension is of greater value to the Alabama Power Co. than to any other person in the world.

Colonel JOYES. Precisely.

Mr. MILLER. It was able to fit it in with its system so that it would become a part of it?

Colonel JOYES. Absolutely; and therefore I believed that in making the best possible arrangement in the contract that we could for them to buy it from us we were making a considerable advance toward the best possible disposition that could be made of it.

Mr. MILLER. Why did you not write into the contract that the price to be paid by the Alabama Power Co. was to be the fair and reasonable price as a going concern, as a part of the Alabama Power Co.'s system?

Colonel JOYES. We might have added a number of your suggestions to the contract, but we did not do it. You were not there to help us.

Mr. MILLER. You had a number of able lawyers.

Colonel JOYES. We would have taken any help we could get; we were crying for help.

Mr. MILLER. There is a vast difference in law, Colonel, between a fair price and a fair price as a going concern and part of the property of another man.

Colonel JOYES. I know it, but let us take the facts. I am not a lawyer, but I will show you some other things that have been done that I think will show you how those things have worked out. Take, for instance, the case of the Utilities Construction Co., in Lorain County, Ohio. In October, 1918, that company had a power plant there on which they had spent about $600,000. The United States contracted to pay about 40 per cent of the remaining cost, and the company was to pay the other 60 per cent. The United States contracted to buy 200,000,000 kilowatt-hours at 8 mills. The United States actually spent on that contract $500,000 and got back $300,000, on precisely the same kind of a set-up as we have here. We went into the Duquesne plant and spent $578,000 and got out of that $300,000 back. That was on the same kind of a proposition as this one. The West Penn Power Co. contracted for 1,700,000,000 kilowatt-hours at 7 mills and a little over, and we were to spend about $2,000,000 there and pay not over 40 per cent of the cost of the building and plant. We were to put $2,000,000 in the bank and let them draw as they saw fit. We actually had to put up more money. We spent $2,409,000 on that property, and in the final settlement of it we got out $1,204,500, which was 50 per cent of what we put in, and all of those people had similar expressions in the contract, not the identical wording, by any means.

Mr. MILLER. On some of those you did not come out as good as that.

Colonel JOYES. That is quite right, sir. Those are where we had those investments in power plants, but I have also some data relative to coke plants. I was simply showing to you the precedents we had. I think we have some precedents as to what constitutes "fair value" in the settlement of such Government contracts.

Mr. MILLER. This was the pioneer contract, was it not? The others were gotten up subsequent to this one, were they not?

Colonel JOYES. Some of them subsequent and some of them prior. I think all of them were signed prior to the actual date of the signing of ours.

Mr. MILLER. But the laying of the foundation——

Col. JOYES (interposing). When you go into arbitration I think you would be entitled to show some of those settlements in order to show what we could get on this contract.

Mr. MILLER. There is another provision to the effect that if they did not buy it, according to arbitration, we were to have the privilege of selling to somebody else, provided the other fellow could not run it.

Colonel JOYES. We had the privilege of doing what we originally agreed to—get off their land and move out of the house we had rented.

Mr. MILLER. That meant scrapping the plant?

Colonel JOYES. Essentially scrapping the plant—giving up the land which we had taken on lease.

Mr. MILLER. That was the point where the Government was at a disadvantage in not having the plant on its own property, Colonel; that is the great disadvantage.

Colonel JOYES. The proof of the pudding is in the eating, and when you come to make a settlement you will find you will get your money back.

Mr. MILLER. Have you anything in mind to the effect that you would get all your money back?

Colonel JOYES. Not all; but, if you will get a fair return, you are doing all that can be expected. If we had decided to build a power plant of our own, we could have done it. We did it at Muscle Shoals. That power plant is built on our own property, and we spent about $12,000,000 on it, but I understand the best thing we have got in sight for it now is an offer of $5,000,000 for that and a lot of other things thrown in, which cost us $80,000,000 or so. That does not look much better than the Alabama Power Co. proposition, does it? On the Alabama Power Co. proposition, if we do not get back 60 per cent of the money we put in there, I will miss my guess; I would be willing to wager something on it right now.

Mr. MILLER. You are figuring on the Warrior steam-plant extension as a temporary affair?

Colonel JOYES. Certainly.

Mr. MILLER. Were you figuring nitrate plant No. 2 as a temporary affair? That is permanent, is it not?

Colonel JOYES. That is permanent; yes.

Mr. MILLER. One is permanent and the other is temporary.

Colonel JOYES. What I am talking about is what you are going to get out of this, or out of both places. You put in in the Warrior extension, etc., some $4,000,000 and you will get out of it $3,000,000, probably, if you treat it as a business proposition. But take this proposition at Muscle Shoals right now; it cost $12,000,000 or $13,000,000, and if you want to treat that as a business proposition, and if the business comes along for it, you can do something with it; but the best thing in sight now is an offer of about $5,000,000 for it, and everything else in the bargain. The reason you have not got anything better in sight as an offer for the Muscle Shoals steam power plant is that it is not tied into any producing and marketing concern. The reason you have a good outlook for the $4,000,000 we threw into the Warrior plant, if you want to put it that way, is that we are tied into a going concern and we have a perfectly plausible and good customer to buy it, and we are tied up to him in the best possible way to get good money for it.

Mr. MILLER. That is your idea of it.

Colonel JOYES. That is my idea; yes.

Mr. MILLER. That you could dispose of that power plant hooked in with the Alabama Power Co., where the Alabama Power Co. can be the only possible purchaser, and you think that is a better proposition than if it was a separate and distinct plant.

Colonel JOYES. Very much better.

Mr. MILLER. You consider that nitrate plant No. 1 was built out of the fund provided in the national defense act?

Colonel JOYES. It was; yes, sir.

Mr. MILLER. And nitrate plant No. 2 was built out of other funds, not out of the national defense act funds?

Colonel JOYES. Yes, sir.

Mr. MILLER. You spoke about the President setting aside $200,000, and then you said there was a subsequent allotment of $150,000 for the purchase of land.

Colonel JOYES. Yes, sir.

Mr. MILLER. You did not use it.

Colonel JOYES. I did not use it for that purpose.

Mr. MILLER. Why did you not?

Colonel JOYES. I turned it back, and it was diverted or allotted to me or somebody else for other purposes.

Mr. MILLER. Was not one of the purposes in turning it back so that there would be no color of claim that the nitrate plant No. 2 in anywise was affected by the national defense act?

Colonel JOYES. Precisely, that is my reason absolutely.

Mr. MILLER. And then when you could get out from under the national defense act you could make this sort of arrangement if you wanted to, so far as it related to nitrate plant No. 2, in conjunction with the offers of a

private concern, which you could not do with nitrate plant No. 1, which you could not do if you bought the land with money provided under the national defense act.

Colonel JOYES. We had no specific legal bar against working in conjunction with a private corporation.

Mr. MILLER. Your whole theory, then, of your being authorized to entwine this Warrior steam plant in with the properties of the Alabama Power Co. as a part of their system is because it applies exclusively to nitrate plant No. 2?

Colonel JOYES. Oh, no; not at all.

Mr. MILLER. Then I have misunderstood you.

Colonel JOYES. I think you have, sir.

Mr. MILLER. I understood you fully. So without nitrate plant No. 2——

Colonel JOYES (interposing). The point is this as to the Alabama Power Co. We built those facilities, the transmission lines, and the Warrior extension, absolutely and specifically for the purpose of securing ourselves power to operate the first half production of nitrate plant No. 2 by the time it was ready, and we did it. Now, having done that, and having provided those facilities, we wanted, through our contract, to have as broad use of the power provided in that way as possible, and we therefore wrote such provisions in the contract as appear in that way.

Mr. MILLER. That the warrior extension was a part of the facilities of nitrate plant No. 2, a part of it?

Colonel JOYES. I do not think we ever said that, did we?

Mr. MILLER. That is what it was designed for, and what you went in for, to drive the first unit through.

Colonel JOYES. No, sir; we said—"I do not recall anything that put that aspect upon it; it was to give us the power upon it; that was all." We were fixing it up for another sort of power, ultimately, for all these needs at nitrate plant No. 2. It was a temporary expedient, which might be used for greater or less time, and which we would hope to use as little as possible, because we hoped to make power cheaper at the bigger plant at Muscle Shoals, and, of course, in the future whatever uses might come for the nitrate plants in the future we hoped to get something out of the water power.

Mr. MILLER. Perhaps I did not make myself plain. If the warrior steam plant had been designed as a part of nitrate plant No. 1 you could not have gone into the arrangement with the Alabama Power Co. which you did go into, could you?

Colonel JOYES. I think there would have been some doubt about it.

Mr. MILLER. But when you went into it along with nitrate plant No. 2 and hooked it up with the warrior extension, that is, hooked up the warrior extension with nitrate plant No. 2, the limitation in section 124 of the national defense act did not apply, as you considered it?

Colonel JOYES. I did not think that applied; no, sir.

Mr. MILLER. That is just the difference then.

Colonel JOYES. My point about that is this, that I take it the contract for the power with the Alabama Power Co. was an independent proposition, independent really of plant No. 2, for that matter, because it was a separate contract for power. It stated the purpose for which we expected to use the power, and that determined the character of the demand and the place where it was to go and so forth. I took it it was an independent proposition. I may be wrong about that.

Mr. MILLER. If nitrate plant No. 2 had no reference to the national defense act why did you locate it at Muscle Shoals?

Colonel JOYES. Because it was the best place it could be put. When we were putting it there we were not affected by, and did not take into consideration the national defense act, except that it might give it in the future a little further value, by giving a cheap water power nearby, and we took into consideration a lot of other factors. As I have said before in other hearings the location down there is very good in a number of ways. We have a good place down there, a level place accessible to the river, where you can get good cooling water for the power station and have the great mass of water that must go through the processes of the plant.

Then it has access to a most wonderful deposit of limestone of the very particular specification required for that process. Then, it is fairly near a good supply of coking coal. The limestone proposition is one of the biggest things in the whole problem. They figured that we would have to quarry about 2,000 tons of stone a day. The actual needs of the plant would call for about 1,200 tons. There is always a waste in quarrying in the matter of dust and things of that kind, and we expect to have to quarry about 2,000 tons a day in order to keep the plant going to capacity. That is some stone, and you do not want to haul it very far. We found a quarry where there was a perfectly good 50-foot bed, which had been analyzed and found to contain 98 per cent calcium carbonate. Most limestone has a lot of magnesia in it and is unfit for this particular development. We went around and hunted until we found a good class of stone.

Mr. MILLER. So that was just the place to put the plant—at Muscle Shoals—it was an advantageous place?

Colonel JOYES. Oh, yes; it was advantageous in many ways.

Mr. MILLER. Why did you not put plants 3 and 4 there, which you placed at Cincinnati and Toledo, if this location had so many advantages?

Colonel JOYES. This location was getting sort of clogged up—when you get so much in there, you can not get any more—and, then, the railroads had limitations. The railroads could only handle so much. There are railroads running in there—the main line of the Southern and the main line of Louisville and Nashville—and there is a little branch running toward Birmingham, operated by the Southern Railway. They could handle the materials for plant No. 2, and that was just about their capacity business.

Mr. MILLER. I see we have 2,200 acres of land there.

Colonel JOYES. The reason for that location of these two plants at Toledo and Cincinnati was the power question, the same thing we were up against—the same proposition in relation to power. We had to get power, and we had to get it by a certain time. So we went to going concerns and we did precisely what we did here in this "unconscionable" contract. We repeated it over again, only worse. We started to do the same thing by building absolute extensions on people's property at Toledo and Cincinnati, and we would do it again under like circumstances.

Mr. PARKER. Colonel Joyes, without going into the exact dates, I understand that transmission line was operating and giving power before anything else was in operation.

Colonel JOYES. That is correct, unquestionably.

Mr. PARKER. The Warrior plant extension was next to operate in giving power. What was the next thing?

Colonel JOYES. What was the next thing?

Mr. PARKER. The Warrior extension steam plant?

Colonel JOYES. The Warrior extension steam plant was operating long before the Muscle Shoals steam plant.

Mr. PARKER. How about nitrate plant No. 2? Was the nitrate plant No. 2 ready for operation before or after the Warrior steam plant extension was operating?

Colonel JOYES. I hesitate a little on those exact dates, because I have this in mind——

Mr. PARKER (interposing). I do not want to press you on that.

Colonel JOYES. The Warrior extension was finished and started on a test run, and after running a certain time it was taken down and certain alterations made. There was no definite break of the turbine, but there was an interruption. I could get you that date more exactly.

Mr. PARKER. I will ask you to state the exact date when the transmission line came into operation, giving the power; when the Warrior extension came into operation and gave power over that line; third, when the nitrate plant No. 2 was completed and ready for operation; and, fourth, when the Muscle Shoals steam plant was complete and ready for operation. You will put those on the record.

Col. JOYES. Yes, sir; we will get you the exact dates of all that, sir.

(Subsequently Colonel Joyes submitted the following:)

CHRONOLOGY.

November 13, 1917: American Cyanamid Co. proposal to build United States nitrate plant No. 2 submitted and accepted by Chief of Ordnance.

November 16, 1917: Above ratified by War Industries Board.

November 6, 1917: Date of Alabama Power Co. proposal.

December 7, 1917: Original purchase orders Ex. orders T–154, T–155, and T–156 drawn by Colonel Joyes on Alabama Power Co. to build transmission line, to build Warrior extension, and to furnish electric energy, respectively.

December 21, 1917: War Industries Board ratified broad lines of this undertaking with Alabama Power Co.

December 21, 1917: Order additional to XOT–154 transmission line, to cover transformer station ("substations").

January 8, 1918: Orders revising XOT–155 (Warrior extension) and XOT–156 (supply of energy).

May 23, 1918: Transmission line ready for operation; and power (at low voltage) available.

June 24, 1918: Alabama Power Co. ready to deliver power to U. S. N. P. No. 2 at 44,000 volts.

July 1, 1918: U. S. N. P. No. 2 commenced use of energy from Alabama Power Co., over transmission line (for construction and preliminary work).

October 21, 1918: Transmission line voltage raised from 44,000 to 110,000 volts.

October 26, 1918: First operation of apparatus (electric carbide furnace) in actual nitrate production at U. S. N. P. No. 2 (same power previously used in preliminary operation of certain plant apparatus).

N. B.—At this time U. S. N. P. No. 2 could not be said to be fully ready to enter into 50 per cent capacity production, but would probably have been ready for successively increasing up to that capacity as rapidly as such work should be increased in a new plant, which rapid progressive increase was actually prevented by the armistice, November 11, 1918.

November 12, 1918: "Deflection tests" upon the installed turbogenerator in Warrior extension made. Thereafter, on account of armistice, work proceeded more deliberately than it had previously.

December 29, 1918: Turbine in Warrior extension operated seven and one-half hours with power load.

January 4, 1919: Preliminary test operation Warrior extension terminated.

January 11 to February 1, 1918: Operated Warrior extension, supplying power for the one-fifth capacity test of U. S. nitrate plant No. 2, all departments.

December, 1917: Design commenced for steam power station, U. S. N. P. No. 2.

January, 1918: Construction commenced for same and pushed to utmost until armistice.

August, 1919: Steam power station U. S. N. P. No. 2 ready for full operating test. Could undoubtedly have been ready earlier but for slowing up, for economy, after armistice, November 11, 1918.

September 10 to October 30, 1919: Test run developing troubles in turbine of the U. S. N. P. No. 2 steam power plant, which necessitated returning two of the three rotors to Pittsburgh for repair and modification by builder.

October, 1920: Retest of steam power plant U. S. N. P. No. 2 carried out successfully.

October 30, 1919: Last of construction force removed from U. S. N. P. No. 2, some time previous to which the nitrate plant proper had been completed and put into condition for preservation idle.

Mr. PARKER. You said in answer to a question that you could build the Muscle Shoals steam plant as quickly as the Warrior steam plant, with the same plant and conditions.

Colonel JOYES. With the same plant and starting conditions; yes, sir.

Mr. PARKER. But you were going to say something as to whether you had the same plant.

Colonel JOYES. They did not have the same plant, or the same scale, nor the same starting condition.

Mr. PARKER. What difference was there?

Colonel JOYES. In the first place, the scale was different. The Warrior extension was a 30,000-kilowatt plant, and the Muscle Shoals plant was a 60,000-kilowatt plant. The Warrior extension was, so to speak, cheaper and a less efficient type, that is, it was not planned for such extreme efficiency for cheap operation and cheap production of power as the nitrate plant No. 2 station. It did not have such elaborate electric controls, and there were several things of that kind. The differences of conditions were these: At the

Warrior plant there was a site all ready and it had all the underground work all ready for carrying the water for the condensers in ample volume, and that saved us a great deal of rock excavating and concrete work; and certain foundations were in; the ground had all been thoroughly explored; the actual construction plans had been drawn by the Alabama Power Co. with a view to using them to build. They had dock facilities there so they could run a lighter up and run a railroad car ashore from it. They had the possibilities of greatly improving that station by the fixing up of that railroad, and in the meanwhile they could handle all of their heavy freight by lighter down from a nearby station on the river. They had an organization all built up, and they had just about completed a construction job for themselves and were ready to take on a new one. They had engineers who knew the country thoroughly. Those are the principal things. It is easy to see that when we got those things we would save a great deal of time.

Mr. PARKER. That is why you expected quicker work there than you could get at Muscle Shoals?

Colonel JOYES. Yes, sir.

Mr. PARKER. And your answer to that question, I think, already given will show how much quicker it worked out after all.

Colonel JOYES. Yes, sir; we had a tremendous amount of rock excavation to do at Muscle Shoals.

Mr. PARKER. That is true; and the proof of the pudding is in the eating, and we will see whether you did get it earlier, from your answer to my questions awhile ago.

Colonel JOYES. Yes, sir.

Mr. PARKER. Meanwhile, beyond all that, by getting through the Warrior steam plant extension you had the opportunity of getting power the moment the transmission line was completed, which was comparatively a very small matter.

Colonel JOYES. Perhaps I misunderstood just what you mean.

Mr. PARKER. It was a comparatively small matter, was it not?

Colonel JOYES. We had actually a certain amount of power as soon as the transmission line was open.

Mr. PARKER. I say the building of the transmission line was comparatively a small matter.

Colonel JOYES. Yes, sir; it was.

Mr. CROWTHER. When you found the law was not sufficient for you down there, or that you were handicapped, why did you not try to get some legislation? It would not have taken very long; it could have been gotten in a very few days could it not?

Colonel JOYES. As to getting land, etc.?

Mr. CROWTHER. Yes.

Colonel JOYES. I think I mentioned that when my attention was called to that act of July 2, 1917, as soon as I realized what it was, I went in and saw General Crozier, in August, 1917, and gave him a memorandum, and I believe that is still in the files. I called his attention to the fact that it did not do the Ordnance Department any good in its work, that we ought to try to get an improvement in the situation, and he told me he already had it up at that time, and I think he went at that pretty promptly, and the act went through and was approved on April 11, 1918.

Mr. CROWTHER. Nearly a year after?

Colonel JOYES. The better part of a year. How long he had been working on it I do not know; I would not like to say to you. I am sure I went to General Crozier in August of 1917, and he told me he had it already in hand. You can tell from your own records about that. There was a bill introduced, which was amended and resulted finally in the act of April. 11, 1918. I do not know just what time it was introduced, but I am sure it was early in the session. It went along and ultimately was enacted.

Mr. CROWTHER. He did not follow up that legislation with the pertinacity and pugnaciousness with which most legislation is followed in the House.

Colonel JOYES. Probably not.

Mr. CROWTHER. I wonder why? From whom did you buy the land for nitrate plant No. 1? Did the Alabama Power Co. own any of it?

Colonel JOYES. Not to my knowledge. We had 75 or 80 ownerships there.

Mr. PARKER. What, in your estimation, was the cause of failure in production in plant No. 1?

Colonel JOYES. It was largely a mechanical proposition. We had leaks in the high-pressure gas pipe lines, and it resulted not only in fires but in lack of a properly pure mixture. There were several things that were not apparently calculated right, in just the right proportion. And then, too, we had to make changes in process in several places. We finally got so we could bring our mixture up to the catalyst in pretty fair shape, but the catalyst at that time had been somewhat hurt by the impure mixture that had come up to it, and it was a very sensitive catalyst. I am saying these things not in criticism of the people who worked it out, but to show you how it fell down. They use a different catalyst from the Germans, partly, perhaps, because they did not know what the German was or how they used it; they wanted to keep clear of the patent rights which the Germans had and which could not be gotten except as a favor from the Germans. Furthermore, they were looking for a catalyst which would work satisfactorily at a lower pressure than the Germans used. The Germans used 3,000 pounds per square inch, and this process was designed to use 1,500 pounds.

Mr. CROWTHER. Just at that time we needed nitrates pretty badly, did we not?

Colonel JOYES. We did need them pretty badly.

Mr. CROWTHER. Do you think it was a good proposition, generally, to go into a process that was to a very great degree experimental at that time? Do you think it was a good thing to go into that process in time of great necessity?

Colonel JOYES. It was a matter of research.

Mr. CROWTHER. That was no time to develop research, was it, when you absolutely needed the nitrates? Was it not the thing to take up the process at that time that you knew would produce ammonium nitrate?

Colonel JOYES. Absolutely so, in your fundamental needs for the war; but at the same time it is a very good business principle to carry on your development work in order to be prepared to have something better. The Germans conducted researches in processes during the war, and profited by it.

Mr. CROWTHER. Did the Alabama Power Co. purchase the right of way for the transmission line under your order, or at your suggestion? Did you have anything to do with the agreement that they were to buy the right of way?

Colonel JOYES. Of course, they did buy that on their own account and paid for it with their own money, but they did it at my suggestion.

Mr. CROWTHER. You have given the reason why you could not have enlarged the No. 1 plant so it could have been used?

Colonel JOYES. Yes, sir.

Mr. CROWTHER. That was impossible?

Colonel JOYES. It was impracticable. In the first place, to build a power plant at No. 1, or any place near Muscle Shoals, would have been perfectly possible; that is, to build a power plant anywhere, but the tremendous amount of condensation water that is required for a power plant the size of a 30,000-kilowatt plant makes it necessary that it be on a river.

Mr. CROWTHER. What was the water power at Gorgas? What was the full horsepower of the subsidiary steam plant? What was their combined horsepower?

Colonel JOYES. They do not strictly combine. They work together and reinforce each other. In the Alabama Power Co.'s system, my remembrance of what I have seen in reliable reports is that they had 67,000 or 68,000 of either kilowatts or horsepower of water power on the Coosa, and machinery for that was installed and perhaps some portion of the year the river would run enough water to develop that much power. At other parts of the year they were down possibly to 12,000 or 13,000 or 14,000 kilowatts, which was all they could get out of the Coosa.

Mr. CROWTHER. Could not the auxiliary steam plant and the water power be run together?

Colonel JOYES. Yes, sir; that was the idea precisely.

Mr. CROWTHER. Was not that big enough to supply you and still supply their customers with whom they had contracted—the power that they had contracted for—would that not have given you sufficient power to run one-half of the plant?

Colonel JOYES. We were thoroughly satisfied it could not be done, by an examination of their lists of customers and their actual production of power; that their combined power production and steam production was not sufficient. As a matter of fact, they had to run at one time as an adjunct to their system, and in order to supply their customers—they had to operate the antiquated Birmingham Light & Power Co. station, where it cost them a pretty penny to get the power they had to have, and there was no surplus.

Mr. CROWTHER. Do you remember who was present at the famous midnight conference on November 13?

Colonel JOYES. At the present moment I could not be positive, but I know General Crozier was there, and I was there; Colonel White, my assistant; and Captain Osborne, and I am pretty sure Mr. Baruch was there.

Mr. CROWTHER. Yes; I think he was there.

Colonel JOYES. And probably some other people from the War Industries Board. I have, at an earlier date, looked back in my mind and tried to remember that, and perhaps I put one or two other names down, but I can not recall any other now. Probably Gen. Samuel McRoberts (then civilian), and perhaps Mr. Brookings, of the War Industries Board.

Mr. CROWTHER. Because this nitrate development at plant No. 2 was not paid for out of the original sum as set forth in the national defense act, is it your contention that that abrogated the general principle of law that was contained in that section as to the United States entering into contracts or business of this kind in partnership with private corporations? Do you contend that because this money was not used that that removed the limitation?

Colonel JOYES. I do not think I would put it that way. The fundamental purpose of that plant was that it was not an act of the President or his agent under the legislation contained in section 124 of the national defense act. It was not intended to be from the beginning, by anybody that I know of who advised the President. It was intended purely and simply to help the Government in its war needs, and, having done so, we found the most certain way to get it was to work with this corporation.

Mr. CROWTHER. You were afraid of the law the way it was; you thought it might——

Colonel JOYES (interposing). We were afraid the law might be invoked and make us trouble.

Mr. CROWTHER. You were not afraid so much that it would get you into trouble as it would keep you out of trouble if you got away from it.

Colonel JOYES. Keep us out of trouble by getting away from any spending of the money. We were afraid the spending of the money for that land would raise some color of doubt as to whether we had done it properly. Furthermore, I would say that there was a great deal of discussion there, some very bitter controversy among the people who had been deputed to consider that and advise as to the use of these different processes, and we wanted to be in accord with all of them, and they had, none of them, recommended this plan, or anything like it, under the national defense act, and we did not recommend it, either. It was for war purposes right straight through from the start.

Mr. PARKER. I forgot to ask you one question. You stated what rent was paid by the Alabama Power Co., as long as the United States paid for power.

Colonel JOYES. Yes, sir.

Mr. PARKER. If we paid for no power what did the Alabama Power Co. pay the United States?

Colonel JOYES. The Alabama Power Co. is not obligated to pay the United States a rental when the United States has suspended its demand for power. They still have to take care of the property and to keep it insured and repair damage at all times. But if they use the power machinery for their own purposes, and they have done so, they then pay us 1½ mills per kilowatt-hour for the use of that machinery. In other words, they rent the machinery from us and pay 1½ mills per kilowatt-hour for every kilowatt-hour of the power they turn out for their own purposes.

Mr. PARKER. Do you know how much that has amounted to lately, in a year?

Colonel JOYES. It is variable, but I was informed not very long ago, a couple of months ago, by some of the officers here, that the Alabama Power Co. were operating that plant up to above 100 per cent capacity. I do not know how that would figure out. This is in the record already. It would amount to a perceptible sum, I guess. After consulting the records I can confirm the figure of $77,211.61, given by Mr. Martin, for the year 1921, as substantially correct. Final reports, adjusted to last cent, are not in our office yet—but it was certainly over $75,000.

(Thereupon, the committee adjourned to meet Monday, March 13, 1922, at 10.30 o'clock a. m.)

COMMITTEE ON MILITARY AFFAIRS,
HOUSE OF REPRESENTATIVES,
Monday, March 13, 1922.

The committee met at 10.30 o'clock a. m., Hon. Julius Kahn (chairman) presiding.

STATEMENT OF COL. J. W. JOYES, ORDNANCE DEPARTMENT, UNITED STATES ARMY—Resumed.

Mr. FISHER. Who was it in 1917 who had charge of the study of the nitrate situation so far as our country was concerned, in the War Industries Board? Was there a committee in the War Industries Board that had charge of such matters?

Colonel JOYES. I can not remember at this moment that there was any committee in the War Industries Board that had to do with the study of such matters. Mr. Baruch himself gave considerable attention to the supply of nitrates and was very active in consideration of that and in pushing the fixation methods. He was active in forming—in fact, he essentially did form, in my opinion, the international committee for the distribution of nitrate from Chile—what was called the London Executives—and also they had an American board to control the distribution of Chilean nitrate in so far as the United States was concerned—that is, to state the United States requirements to come before the international executives against the requirements of the other allies; and Mr. Baruch had with him, as his immediate assistants on technical matters, including nitrates, Mr. L. L. Summers and Mr. Chase and Mr. MacDowell. Mr. L. L. Summers and Mr. Chase—I do not remember Mr. Chase's initials—but he and Mr. Summers are partners in New York City, I think, as consulting engineers, especially on chemical processes. He is con- MacDowell—Charles H. MacDowell—you have had before you. He is connected with the Armour Fertilizer Works and I think is now president of the American Fertilizer Association. Those are the people I think of now.

As to the study of fixation processes, there was a committee appointed by the National Academy of Sciences and the National Research Council back in 1916, and that sat for quite a while and made a report, as you know. That was superseded by another one appointed, I think, very early in 1917, with some of the same members. They made a report in May, 1917, and that is the one under which we started to work and built the No. 1 nitrate plant. I think that was not tied in with the War Industries Board. That is my remembrance. Later on, there was a reconstituted committee appointed by the Secretary of War in 1918 to advise on certain matters, and of that committee Mr. Summers, of the War Industries Board, was a member at that time in 1918.

Mr. FISHER. When the drive came on your department to tremendously increase the nitrate supply, with whom was it that you conferred? Was it that committee of the War Industries Board that you conferred with before you definitely adopted a plan?

Colonel JOYES. It was not a formal committee, but there was a meeting held. The first I heard of it was a meeting called, I think, in Mr. Baruch's own office, and I am quite sure that both Mr. Summers and Mr. Chase were present, probably, also, Mr. MacDowell, and Majors Burns and Backus, Ordnance Department. I think it was on that occasion that Colonel Hoffer was present, who was in charge of the gun and ammunition provision for the Ordnance Department. It is difficult to be absolutely certain about these matters, because a good deal of time has passed, but at any rate there was a consultation there which was called together by Mr. Baruch himself to consider how to provide for the shell filler, especially, that was stated to be required by Colonel Hoffer. He was the man who brought it up. I think that has been spread pretty fully on the records after more careful search and therefore more reliably than I could state it offhand at the moment, but that was essentially the situation.

Mr. FISHER. Take, for instance, the contract that was finally signed with the Alabama Power Co., was it necessary in the procedure that was adopted in the War Department at that time for you to call into conference or have the approval of other officers in the War Department besides those in your immediate division?

Colonel JOYES. Oh, yes; indeed. As you see, my immediate division, the Nitrate Division, did not even sign the contract and did not even draft it. We negotiated with the man who drafted the contract, Colonel Williams, and who signed it. He was in the Procurement Division. It had been thought best in the reorganization of about the 1st of January, 1918, or thereabouts, to put all the contracting powers in one division, the Procurement Division, which was behind by Gen. Samuel McRoberts (National City Bank) and contained Col. R. P. Lamont, Col. Charles N. Black, ex-Senator Watson, of West Virginia, and other business men of large caliber. After that nobody else in any division signed any contract or placed any other except the Procurement Division. Anybody who had his requirements stated them and they went up to the Procurement Division to be met, and if the man who stated his requirements knew of a way to get them, he suggested that; and if he had any knowledge or was otherwise in a position to assist, he went up and helped to negotiate or led the negotiations, as the case might be. In our case, we largely led the negotiations; at least, we prominently assisted, and besides Colonel Williams, who was to actually sign the contract, in the Procurement Division, there were several individual officers of the Procurement Division who were required to sign as approving the arrangement or the contract, after fully drafted and completed. I passed in a page of approvals on the last day I was here, Friday, which showed just the names of those officers who approved it; and in addition to the individuals, there was an approval registered on that sheet—I think it was called the contract board of review of the Procurement Division. I am merely referring to that now and not naming it, because it appears on the paper which I submitted, by the correct name.

At that time I did not pass in, because my attention for the moment was diverted, a paper which I have on the table here, which shows where I applied for clearance on the contract from the office of the Purchase, Storage and Traffic Division of the War Department, General Staff, and that clearance was granted. There was also a clearance which had to be obtained from them by the clearance committee of the War Industries Board, as a final, last ratification. Here is a paper dated November 8, 1918, in which I applied to the clearance committee, Purchase, Storage and Traffic Division, General Staff, through Maj. E. B. Glenny, Ordnance liaison officer:

"Subject: Clearance for proposed contract with Alabama Power Co., Birmingham, Ala., for electric energy, etc.

"1. Clearance by the clearance committee of the Purchase, Storage and Traffic Division, General Staff, and by the clearance committee, War Industries Board, is requested for a proposed contract with the Alabama Power Co., Birmingham, for the furnishing of about 30,000 kilowatts of electrical energy for the partial operation of the United States nitrate plant No. 2 at Muscle Shoals, Ala., and for other uses in connection with the production of ammonium nitrate at Muscle Shoals and Sheffield, Ala., a draft copy of which contract is inclosed herewith.

"2. To furnish the power requirements at nitrate plant No. 2, now estimated by the Air Nitrates Corporation as being 82,000 kilowatts, provision was made for the installation of a 60,000-kilowatt steam turbo station on the United States reservation acquired for said nitrate plant, and as the Alabama Power Co. had a recently completed steam electric generating station of 20,000 kilowatts capacity located on the Black Warrior River near the coal mines, and has provided in the original construction, water intake, subfoundation, and other facilities required for a proposed future extension to that station, and could, by the construction of a transmission line between its Warrior generating station and Muscle Shoals, supply energy for construction and preliminary operation purposes, at a much earlier date than power could be provided for at Muscle Shoals, it was considered to the best interest of the United States to take advantage of the partially constructed facilities at the Warrior site, and to use them to the greatest extent possible in connection with the installation of a 30,000-kilowatt Government owned unit on the property of the Alabama Power Co.

"3. After preliminary negotiations between this office and the representatives of the Alabama Power Co., work orders were issued to the power company to construct for the account of the United States, a 30,000 kilowatt extension to the power company's generating station, an 88-mile transmission line from Warrior to Muscle Shoals, and the required step-down transformer station at Muscle Shoals. The construction work progressed, as did negotiations with the company pointing toward an equitable operating arrangement, and suitable provision for the acquisition of the additional generating capacity, step-up trans-

former station, and other facilities at the Warrior site, at some future time by the Alabama Power Co. These conditions are now fully embodied in the attached draft of contract, and have been very carefully studied by legal officers of the procurement division, and others specially qualified, so that every assurance is felt that the agreement embodies the best conditions possible under the circumstances and suitable safeguards for the interest of the United States.

"4. Early action upon this contract is requested, particularly in view of the fact that power in greater quantity than was provided in a temporary power contract entered into by the Air Nitrates Corporation and the Alabama Power Co., is now being supplied for the partial operation of United States nitrate plant No. 2.

"J. W. JOYES,
"*Colonel, Ordnance Department, United States Army.*"

There is a notation below that over the signature of C. F. Beames, major, Ordnance Department, U. S. A., one of my assistants, dated November 12, 1918:

"NOVEMBER 12, 1918.

"Clearance granted November 9, 1918, Army No. 12835.

"I certify clearance to contract between Alabama Power Co. and the U. S. No. T. 69 was granted by clearance committee and given clearance Army No. 12835, on November 9, 1918.

"C. F. BEAMES,
"*Major, Ordnance Department, United States Army.*"

That is the record of the clearance.

Mr. FISHER. Coming specifically to that part of the Alabama Power Co. contract which gave to them the option to buy the buildings erected by the Government, can you state who it was that insisted upon that provision? Upon whose insistence did that provision go into the contract?

Colonel JOYES. Well, I doubt if I would use the word "insistence," because I think both sides looked upon it as the thing to do, if we could.

Mr. FISHER. Was it a provision that had been included in any other contract? Was it included, later, in any other contract that the Government entered into for like work or like construction?

Colonel JOYES. Yes, sir; it was quite usual. This was not an unprecedented contract in any way, shape, or manner in that regard. It was exactly the same kind of contract, in principle, that was entered into in many other cases, and it was regarded as quite normal. They had various differences in phraseology and in special provisions, but it was quite a recognized practice and considered by the department to be desirable. I have a letter here that I ran into the other day that perhaps would be significant in that connection. This is a letter in the files of the Ordnance Department, dated May 3, 1919, addressed by the Acting Chief of Ordnance to the Director of Operations of the General Staff, asking a certain arrangement for the settlement of contracts:

"MAY 3, 1919.

"From: The Ordnance Department.
"To: Director of Operations.
"(Attention of Construction Demobilization Committee, room 345, State, War, and Navy Building.)
"Subject: Disposal of plants built for and by the Army since April 5, 1917.

"1. Reference is made to your memorandum of April 22 on the above subject. A partial list of the plants on which a considerable amount of money has been spent to erect buildings and fixtures so tied to the land that separation would be difficult will be furnished your committee shortly. These facilities are grouped under district offices of the Ordnance Department under whose general control they come.

"2. With regard to the manner in which these facilities were acquired, the Ordnance Department contracts, as a rule, were production contracts made on the assumption of war of three years' duration. Contracts or procurement orders usually contained the following provisions:

"(*a*) As the primary consideration, production of a large amount of war material.

"(*b*) For the reason that the contractor was experienced, but did not have sufficient facilities to meet the demand of the Government, procurement by the contractor of (*a*) land—as a manufacturing site, with the provisions that the lease to the Government would be nominal and that the Government after the war or termination of the contract would first give the contractor preferential consideration in the purchase of the facilities and sell them to him or remove

the facilities; (*b*) temporary buildings and fixtures, which were to be personal property of the Government; (*c*) manufacturing equipment, which was to be personal property of the Government.

"3. The conferences preliminary to giving orders usually were conducted on broad principles. The duration of the war and business conditions being uncertain, agreement by the contractor to purchase the buildings and fixtures at a determinable price after the war was not considered fair. The contractor represented that he wanted to buy the buildings and that he would pay a better price provided he was allowed to specify the character of the facilities and the construction and arrangement of the buildings. On the assumption he would do this, the request was usually allowed, and he was to be given preferential treatment if the buildings were sold. As a general rule, the buildings were much better than the need warranted, and much better than would have been built if these representations had not been made by the contractor. The contractors in most cases produced a small amount of material or nothing.

"4. As a rule a contractor's existing plant was modified and additions were so made to the plant that efficient production would result. In such plants the Government-owned buildings and facilities became practically a part of the contractor's plant. Some plants were built in such a manner that the Government buildings house complete processes without reference to the contractor's plant except to make use of existing transportation facilities and utilities such as water supply, power supply, and refuse disposal."

That is signed by W. S. Peirce, brigadier general, Ordnance Department, U. S. A., Acting Chief of Ordnance. That is all that I copied from the record, because the remainder relates merely to the proposal which the Ordnance Department had to make as to the desirability of a certain method of settlement of those contracts.

Now, that is for the Ordnance Department. I have a couple of publications that came out in 1918 that are pertinent to this particular question, and may be put in the record or as much of them as is desired.

On August 3, 1918, the War Department, purchase, storage, and traffic division, of the General Staff, an office then under the command of Maj. Gen. George W. Goethals, and in complete control of all matters of procurement, whether they actually did the procurement or not, issued a supply bulletin No. 13 headed:

"Subject: Contract provisions regarding increased manufacturing facilities." It began:

"1. Where increased manufacturing facilities are constructed at the expense of the Government or where their cost is amortized in the price paid by the Government, the contract shall provide that title to such facilities shall vest in the United States. The contractor may agree to take such facilities at a fair value in diminution of the profit which he otherwise would make.

"2. Where title to increased manufacturing facilities vests in the United States, the contract shall provide that the contractor may make written offer to the Government to purchase such facilities, whereupon, if the Government accepts such offer the contractor shall become obligated to pay for such facilities at their appraised value at that time. The contract shall further provide that if the contractor does not make or the Government does not accept such offer, the Government shall have the right to remove such facilities after the termination of the contract within a time reasonably sufficient to effect such removal. The contract may provide that the Government shall have an option at the termination of the contract to purchase at an appraised value the land on which such facilities are erected.

"3. If, in any case of such increased manufacturing facilities, it is desired to make a contract along lines different from those herein established, the approval of the superior board of review shall first be secured.

"By authority of the Secretary of War.

"GEO. W. GOETHALS.
"*Major General, Assistant Chief of Staff.*
"*Director of Purchase, Storage and Traffic.*"

Here is another, a supply circular No. 128, dated December 13, 1918, from the same office, War Department, Purchase, Storage and Traffic Division, General Staff. This is likewise signed by Maj. Gen. Geo. W. Goethals. This is very long. It begins with a preamble. "Attention is directed to the desirability of using, where applicable, the following contract provisions on real estate and structures and equipment thereon." There is so much of this I doubt if it would be desirable to have it all read. Essentially, it is giving

standard forms. The first caption is, "Selection and purchase of site of plant. The contractor agrees forthwith to select," etc. That is in case where there is actual conveyance of the land in fee to the United States.

The next caption is, "Title to increased facilities: It is expressly agreed that the buildings, plant, equipment, machinery, and other improvements, etc., shall become the sole property of the United States and that the contractor shall not set up any lien, etc., against them," etc.

Mr. FISHER. Colonel, have any steps been taken whatsoever under the Alabama Power Co. contract to make settlement accorded to the means provided under the terms of the contract?

Colonel JOYES. Not to my knowledge, sir. The matter has not been in my charge in the period you refer to, since fairly early in 1919. I had some connection with the matter of the nitrate business after that time, but the control was vested in Mr. Arthur Glasgow and Mr. George J. Roberts, civilians, in order that they might try and find a business arrangement. Subsequently Maj. J. H. Burns has been in charge.

Mr. FISHER. In the construction of the steam power plant as a part of nitrate plant No. 2, does that generate power sufficient to carry nitrate plant No. 2 as a going concern?

Colonel JOYES. You are referring to the steam plant which is at nitrate plant No. 2?

Mr. FISHER. How much power can be generated at the powerhouse at plant No. 2?

Colonel JOYES. That is rated at 60,000 kilowatts, at a certain power factor. There was, of course, a rating given to it in kilo-volt amperes, which is a somewhat different proposition on account of the power factor. The voltage and the amperage being not in phase exactly will make a little less rendition in kilowatts than would be the product of the volts and amperes. The units there, as I remember it, are rated as something like 66,000 k. v. a., and it is something like that, but I believe that unit is capable of running a little overload; essentially, all units are, but I would not say that that should be run continuously at much over 60,000 kilowatts with such a power factor as it will probably have. That is about as much as it ought to give. That is about 80,000 horsepower, and I believe the full power required for full rated production, 110,000 tons of ammonium nitrate per year, requires—well, it has been variously figured and there is a little discussion and uncertainty as to just how much power is really required, but it has been variously stated at various places between 82,000 and 100,000. I think it comes, myself, fairly well up toward 100,000. I notice that there has been the statement made that the 60,000 kilowatt unit at the plant would run the plant, and it may be possible that it would skim through, for some such reasons as these: That the apparatus might give a larger yield for a given input of electric power than was indicated by the trial test, when it got to going smoothly. That is problematical. Again, that statement may have been predicated upon the running of the steam power plant a little overload. As to that, I really can not say, but I should say that it needs a little more power than is really present in the generating unit of the steam power plant of nitrate plant No. 2 to produce is full rated production.

Mr. FISHER. Have you examined——

Colonel JOYES (continuing). We changed the plan of that power plant early in its construction and increased the size of it so that there was ample room in the electric generating room to put in another unit. Something on the order of a 30,000-kilowatt unit could be put in there. There is ample space. The boiler capacity is sufficient to carry it. There is always put in boiler capacity that is expected to be carried as spare usually, and we have there 12 boilers, 3 of which were put in after the original plans were made, with the expectation that that would be a more liberal allowance of spares and at the same time would provide steam enough for an additional 30,000 unit if it were found necessary at any time.

Mr. FISHER. Have you examined the Ford offer?

Colonel JOYES. Yes, sir; sketchily. I would not say I have studied it.

Mr. FISHER. Particularly as to the provision in the Ford offer which offers to keep the nitrate plant No. 2 as an operating chemical plant, so that the Government can have it as a laboratory for its officers or employees, would you say that the provisions of that offer would mean nitrate preparedness for our country?

Colonel JOYES. I think that is a highly advantageous provision in his contract, and I think that would be a very useful contribution toward preparedness as to nitrogen provision of the United States. Its research-laboratory feature I regard as very desirable, and the fact that it keeps the plant in readiness to produce up to its full capacity of the product for which it was built is also a very desirable provision, and in so far as the capacity goes, it is protection for the United States. That is not, however, to be regarded as providing all that the United States would need in that regard. I qualify that because, to be entirely and absolutely safe in the matter of nitrogen from the military munitions standpoint, that is not all that is required. It is not complete independence of Chile, as the people speak of it, for several reasons. It is not a sufficient quantity and the product is not brought to the final state which makes it available for all processes. The ultimate product—ammonium nitrate—was what we were after in 1917 and 1918. That would not, however, be what we might want at another time. It would not help us one iota in the manufacture of smokeless powder, because smokeless powder requires to be made out of cotton or paper pulp or a similar cellulose material, and to be nitrated with nitric acid; and not only that, it must be strong nitric acid, a concentrated nitric acid, and there is no provision at nitrate plant No. 2 for concentrating the acid. It comes to a strength in the towers of about 50 per cent HNO_3, and the rest is water, and I think that is about as high as it can go and probably higher than will be done in actual practice ordinarily. To use that in smokeless-powder manufacture it must be stronger. To ship it to another point it must be stronger, because the weak nitric acid corrodes iron, while the strong nitric acid will not. There is a peculiar situation in that regard. You see therefore the reasons why I qualify my statement as to "full preparedness," but it would be a most desirable step toward preparedness.

Mr. FISHER. If the Congress fails to accept the Ford offer, has the Ordnance Department or the War Department, to your knowledge, any program for the production of nitrates?

Colonel JOYES. I have no personal knowledge of any program that the War Department would have to propose at this time. The War Department did propose the authorization by Congress of a corporation to take over and operate the power of the Wilson Dam and all the nitrate properties, together with such cash as remained on the books, about $1,500,000 or so, under the old $20,000,000 appropriation, in return for receiving which this corporation was to issue common stock which was to go to the United States in toto. Then they were to have as an operating capital about $12,000,000, which was to be provided by the United States and the return for which was to be preferred stock issued to the United States in toto. In other words, no one should own any stock in the corporation except the United States. The directors were provided for and all that sort of thing. It was also proposed that to get the operating capital of some $12,000, a certain amount of Chilean nitrate in storage would be marketed instead of trying to raise the money. That was passed in modified form by the Senate, I think, in the session of 1919—I can not remember whether that was 1919–1920 or 1920–1921, but it was passed by the Senate in modified form and failed to come up in the House to a vote. Since then I believe there has been no effort to revive it on the part of the War Department.

Mr. WRIGHT. Colonel, when did you locate nitrate plant No. 2?

Colonel JOYES. About from the 20th to the 23d of November, 1917. It was essentially decided that it would go to the vicinity of Muscle Shoals when the proposal was accepted in the office of the Chief of Ordnance and by him on the 13th of November. It was practically a foregone conclusion at that time, although it was not definitely settled, that it would all go there as a single plant.

Mr. WRIGHT. When did you actually lay it out and go down there and take possession of the land?

Colonel JOYES. My first answer covers that question, about the 20th to the 23d.

Mr. WRIGHT. In doing that, under what law were you operating?

Colonel JOYES. Under the general laws which allowed the President to make provision of munitions for the war, under the appropriation act for the armament of fortifications.

Mr. WRIGHT. If you were doing that, why did you have an allotment made out of this $20,000,000 fund created by the national defense act of June, 1916, set apart with which to buy the very ground you were going to place the nitrate plant on?

Colonel JOYES. Because of the feeling and the decisions and instructions that were given by those in authority that we practically could not use the general appropriations for the purchase of land; and that was barred, in so far as law went, by two sections of the Revised Statutes, which caused the great trouble there, section 355 and section 3736; 355 was about the examination of title and certification by the Attorney General and permission of the State before anything could be done to improve land, and then the other, section 3736, was that no land should be purchased except by specific act of Congress mentioning the land specifically.

Mr. WRIGHT. Colonel, did you have much trouble acquiring land, even in the early stages of the war? How did you get possession of all these vast tracts on which you constructed cantonments and other war activities? Did you just go out and take them?

Colonel JOYES. Congress passed on July 2, 1917, a law which provided for what they undoubtedly figured would be the most urgent needs. At that time nobody seemed to have thought, for some unaccountable reason, of the munitions program, but they passed a law at that time which suspended section 355 of the Revised Statutes and which authorized the President to take possession permanently or temporarily of any lands that were required for three things—the military camps, the coast defenses, and fortifications. I am not attempting to quote the language, but there were three things mentioned. I put the section in evidence the other day, and perhaps I had better speak from the book.

Mr. WRIGHT. If that is already in the record, I do not want it repeated.

Colonel JOYES. It is already in the record.

Mr. WRIGHT. Well, stop right there on that.

Colonel JOYES. The language of the law of 1917 is right here at the bottom of this sheet [indicating].

Mr. WRIGHT. Now, colonel, if you had $200,000 set apart, out of the national defense fund with which to buy the land, how were you going to pay for the construction work down there on nitrate plant No. 2?

Colonel JOYES. The instructions were just this: I was given allotments out of the appropriation which is officially known as armament of fortifications C. That is the subhead of the armament of fortifications appropriation which has to do with the providing of ammunition for various kinds of cannon, and that was to cover all the expenses of the plant. The only reason for taking the $200,000 allotment out of nitrate plant money; that is, the $20,000,000 of the national defense act was that that was the only place we could see where we could get any authority to buy the land. It was used in the same way in other places. I know we drew upon it for the land for the nitrate plants in Ohio, and had an allotment set up in the same way there; but before we came to spend the money a new law had been passed, and there was authority for getting the land from armament of fortifications, and we had the allotments revoked in the same amounts originally made, and we had new allotments made from armament of fortifications, and paid for the land out of those allotments. To show you the situation as to land, I was called on several times to consent to a request upon the President to allot certain sums out of the $20,000,000 for the purchase of land at various places for various needs of the Ordnance Department. I know it was considered—I am positive it was considered and I was consulted about it, where it was actually done or not—that money should be taken from that $20,000,000 to buy land at Perryville for that plant to make ammonium nitrate by other than a fixation process, a nonfixation process, and for, I think, one of the big powder plants at Nitro or Old Hickory; I do not remember now positively. I do not think a cent of money was spent for any such purpose out of the $20,000,000, but I know it was considered and I was consulted about it.

Mr. WRIGHT. Is it not a fact, colonel, that when you were locating this nitrate plant that the only authority of law you had for doing so was the national defense act of 1916, and that, regardless of where the money was to be derived with which you would pay for the construction, that the authority for establishing these plants was derived from the act of 1916?

Colonel JOYES. I would not say the authority for establishing the plants. It could hardly be said, I believe, that the authority for establishing the plant could be given by the national defense act, which appropriated only $20,000,000. We knew we could not do it with that.

Mr. WRIGHT. I am not talking about the fund so much.

Colonel JOYES. I question whether we had any authority of law.

Mr. WRIGHT. I am not talking about the fund with which you were going to pay for this work so much as the authority you had for starting the work.

Colonel JOYES. I am frank to say to you that I think there was very questionable authority for doing it.

Mr. WRIGHT. Did you know exactly where you were when you were establishing these plants, as a matter of legality?

Colonel JOYES. We had a pretty fair idea that we were working with very little backing in law or legislation for all the things we were called upon and required to do.

Mr. WRIGHT. But the best legislation you had, so far as these nitrate plants were concerned, was the national-defense act of 1916, and the evidence of that is that the very money with which you were to pay for the land was allotted out of the national-defense fund.

Colonel JOYES. We did that, sir; not because it was authority for anything carrying the word "nitrogen" or "nitrate" but because it carried the word "land." That was the only reason, sir.

Mr. WRIGHT. The land could only be used, if you paid for it out of the $20,000,000 for nitrate purposes, for the establishment of nitrate plants. You would not have been authorized, in other words, to have taken part of that $20,000,000 created by the national-defense act of 1916 and built a cantonment on the land or to have bought the land and built a cantonment on it.

Colonel JOYES. I do not think we would have gone quite that far, sir; but I know that they had their eyes on it for other things than fixation processes, as I told you.

Mr. WRIGHT. Now, your idea is that the sole means by which to determine under what law these plants were constructed, especially nitrate plant No. 2, would be with reference to the funds with which they were paid for?

Colonel JOYES. I think that is a legitimate assumption.

Mr. WRIGHT. That is your idea about the whole situation?

Colonel JOYES. That is my belief, sir.

Mr. WRIGHT. And that is the reason you claim now that nitrate plant No. 2 was not constructed with reference to the national-defense act of 1916?

Colonel JOYES. Yes, sir.

Mr. WRIGHT. Because it was not paid for out of those funds?

Colonel JOYES. That is my belief. I am not claiming anything, sir. I am not making any advocacy of any particular point of view. I am simply giving you what light I can on it. That was the intent we went under. What I am here to say is that the whole reason——

Mr. WRIGHT (interposing). Colonel, let us understand one another. I am not here to criticize you, I am going to assume——

Colonel JOYES. I am not looking for it.

Mr. WRIGHT. I am going to assume that with the situation surrounding you, you evolved out of this situation the best contract you could.

Colonel JOYES. We tried to. What I would like to say to you is——

Mr. WRIGHT (interposing). And what I mean by the situation is that your contracting party was pretty difficult to deal with.

Colonel JOYES. Oh, yes, sir.

Mr. WRIGHT. You said here, last week, that the Alabama Power Co. submitted some suggestions in the drafting of this contract that you could not meet.

Colonel JOYES. Yes, sir.

Mr. WRIGHT. Now tell us some of the claims they put up while you were negotiating with them, if you recall them?

Colonel JOYES. That is a pretty hard thing to come back to, sir, from such a long distance of time, but I will do my best.

Mr. WRIGHT. Well, I suppose some of those suggestions stood out prominently. What were the ones that impressed you during these negotiations, as to the claim they were making or their insistence on what they wanted, and so on, that you did not think could be met? I am trying to get the attitude of the party you were contracting with. That is what I want.

Colonel JOYES. I know. I had some extracts, sir, from the earlier attempts at a contract that might have helped a little bit on that. Well, for one thing, the president of the Alabama Power Co., Mr. Mitchell, in some of the very earlier talks had suggested or had hinted at some improvement of the water powers in Alabama as a means to help out, and I told him we could not think about that.

Mr. WRIGHT. What were those water powers, some that they controlled?

Colonel JOYES. Yes, sir; I believe so, along the Coosa. Most of the difficulties we had with them were over little things that were coming up. For instance, they would want us to put in a little bit more than we thought we ought to put in.

Mr. WRIGHT. What do you mean by "a little bit"?

Colonel JOYES. Sometimes I mean a very little bit and sometimes I mean a big bit. That was not an accurate expression, Mr. Wright. I should not have used it. I mean, for one thing, in the beginning it was represented that we ought to put in two turbogenerators down there in order that one might be a spare.

Mr. WRIGHT. That turbogenerator would cost about $1,500.000, would it not?

Colonel JOYES. No, sir; the turbogenerator costs about $350,000.

Mr. WRIGHT. But installed it would cost about $1,500,000?

Colonel JOYES. Installed, it would cost considerable.

Mr. WRIGHT. And that was one of the little things?

Colonel JOYES. No, sir; I told you that I used that word inadvertently.

Mr. WRIGHT. Then let us withdraw that.

Colonel JOYES. It would have been better not to use that word. Then they stood out for more boiler capacity than we wanted to put in, and we ultimately put in more than I would have liked to put in, but some of my own advisers finally brought me around to that, showing that we would be in a better position as to the assurance of our power if we put in a little more liberal boiler capacity.

Mr. WRIGHT. Right there, Colonel, you had a good deal of difficulty in standing between these people and the Government's interest, did you not, all along?

Colonel JOYES. I do not think I would ever willingly go into such a proposition and I did not go into it willingly.

Mr. WRIGHT. I say, you had great difficulty. It was a hard task that you had to protect the Government's interest as against these people with whom you were contracting, the Alabama Power Co.

Colonel JOYES. It was hard; yes, sir.

Mr. WRIGHT. Right there, Colonel, really all you wanted was a little auxiliary power to come from this plant?

Colonel JOYES. Quite a good deal of auxiliary power.

Mr. WRIGHT. Well, some auxiliary power to supplement your steam plant at nitrate plant No. 2, the one you were constructing?

Colonel JOYES. No; that is not quite the set-up. What we really needed was enough power to put our first half of the plant into production and be able to furnish the ammonium nitrate that our people were short on at the time, when the chemical plant was expected to be ready to produce it.

Mr. WRIGHT. Well, the point is that you did not anticipate going into the improvement of the Gorgas steam plant on the Warrior River on as large a scale as they wanted you to go into it.

Colonel JOYES. Not quite, sir. I would not have ever willingly spent a penny for any such purpose as that if I possibly could have avoided it.

Mr. WRIGHT. In other words, they impressed you with the fact that they had built this plant for the future; that they had installed a plant there, and their idea was to increase it for the future and they wanted to get you to enter into a contract with them by which they could do that.

Colonel JOYES. Well, I do not think there is any doubt whatever in the world that the Alabama Power Co. was quite glad we came in there and did it. I do not doubt it at all. They had planned, as I have said, the improvements, and they had ordered their turbine. They had their turbine under order, and some other stuff. I noticed in the hearings the other day that their president said one piece of apparatus he had been actually forced to buy and had it in his plant, because he could not cancel his order, and they had not been able to put that in, or had not done so. Their reasons for not doing it were their own, and I really am not able to speak, but the general presumption was that perhaps they were not quite ready for it in their business and perhaps they could not get the money, either one or both.

Mr. WRIGHT. Now, you have mentioned the fact that one suggestion they made was to improve their water power and the next one was that they wanted two of these—what do you call them?

Colonel JOYES. Turbo generators.

Mr. WRIGHT. Two of these turbo generators installed instead of one. Now, what were some of the other things that they suggested?

Colonel JOYES. I have told you that they advised or recommended or asked for more liberal boiler capacity than——

Mr. WRIGHT (interposing). Than you thought the plant required?

Colonel JOYES. Than I thought at first the plant required, and then they asked more in the way of auxiliary improvements, such as are always necessary to the running of a power plant in an isolated place like that.

Mr. WRIGHT. Well, did you have much difficulty in reaching an agreement with them about this sale proposition—section 22 of the contract, I believe it is—which you have analyzed here?

Colonel JOYES. As I remember it there was a considerable amount of difficulty in reaching anything like an agreement, mostly as to the methods, the time, etc. As you know, in their very first proposal they said they would put in at their own cost an extension to their plant to support our power requirements provided we would make them or get them a loan. Then there were various other ways that we thought of to try to achieve the same end. As I said the other day, we sent them around to the War Finance Corporation or War Credits Board with one of my officers to see if they could not get something in that way.

Mr. WRIGHT. Now, going back a minute. I believe you said last week that the first mention you recall of the Alabama Power Co. in this project came through the American Cyanamid Co.?

Colonel JOYES. Yes, sir; I believe so.

Mr. WRIGHT. Was that directly to you or your department from the American Cyanamid Co. or was it the Alabama Power Co.'s offer mentioning the fact that their attention had been called to the matter by the American Cyanamid Co.?

Colonel JOYES. Their name was mentioned in those letters or proposals from the American Cyanamid Co. of various dates.

Mr. WRIGHT. Can you give us the date of that?

Colonel JOYES. They were at various dates, from October 29 up to November 13, and in several of those the Alabama Power Co.'s system is mentioned.

Mr. WRIGHT. Have you inserted those letters in the record?

Colonel JOYES. They are all in the record of Mr. Graham's subcommittee on ordnance war expenditures.

Mr. WRIGHT. I would like to get those dates in this record.

Colonel JOYES. I am sure it is mentioned in there. The first I heard directly from the Alabama Power Co. was in a letter from them. Now, I can not remember, but I think it is likely that——

Mr. WRIGHT (interposing). But the first suggestion——

Colonel JOYES (interposing). Pardon me; I would like to correct one thing I said the other day. I think it is likely I said the other day that the first communication I had from them was their proposal dated November 6 or thereabouts, but I found accidentally in looking at the files the other day that there was an earlier letter of November 1, 1917. That is a difference of about five days, but I would like to have it as exact as possible. That was a general statement that their attention had been called to the situation, and so on. That was about all.

Mr. WRIGHT. It might become material, Mr. Chairman, to get these dates in the record. I do not think they are in the record. That is, the dates of this correspondence between the department and the American Cyanamid Co. and the Alabama Power Co. and the department.

The CHAIRMAN. As I recall, when we took up this matter originally most of these dates were put in the record.

Mr. WRIGHT. No, sir; he refers here to the report of the Graham committee and says they are in there, but I understand they are not in this record.

The CHAIRMAN. Can you give the dates?

Colonel JOYES. May I refresh my memory from this record of the Graham committee for a moment? I do not know whether it is in this volume or not.

Mr. WRIGHT. I do not care to consume the time by waiting for that now.

The CHAIRMAN. Colonel, can you get those dates?

Colonel JOYES. Oh, absolutely; yes, sir.

The CHAIRMAN. And will you please put them in the record?

Colonel JOYES. I will be very glad to do so, Mr. Kahn. That is very simple, and they are very closely connected, and they are all embraced absolutely in between about October 29 and November 13.

Mr. PARKER. Are the letters short?

Colonel JOYES. No, sir; the letters are quite long.

Mr. PARKER. You spoke of a letter in which they offered to build an extension if you would lend the money. Was that in a letter?

Colonel JOYES. Yes, sir; that is a letter that would occupy about a page of the record of the hearings.

Mr. PARKER. I would like to see such an important matter as that put in just as it is.

Colonel JOYES. Very well, sir.

(The witness subsequently submitted the following:)

Memorandum: Citations of mentions of or allusions to loan as basis of additional facilities Alabama Power Co. system.

The following documents pertinent are listed for convenience of reference, as they do not all appear in the records of this committee; page numbers refer to report of hearings before the Subcommittee No. 5 (Ordnance) of the Select Committee on Expenditures in the War Department, House of Representatives, Sixty-sixth Congress, first session, on war expenditures (Hon. William J. Graham, chairman).

Letters from American Cyanamid Co.: October 13, 1917, page 2937; October 29, 1917, page 228; November 5, 1917, page 230; November 12, 1917, page 234; November 13, 1917, page 238.

Letters from Alabama Power Co.: November 1, 1917 (quoted immediately following this list); November 6, 1917, page 2708. **(This letter of November 6 is also printed at an earlier point in the present hearing.)**

ALABAMA POWER CO. (INC.),
New York, November 1, 1917.

Col. J. W. JOYES,
Division T, Ordnance Department,
719 Fifteenth Street NW., Washington, D. C.

DEAR SIR: The officers of the American Cyanamid Co. advise us that our cooperation may be desirable in connection with the early supply of electric energy for the production of nitrates in northern Alabama. We wish to assure you of our hearty cooperation in any measure which will tend to facilitate the Government's ends in this direction.

At present our nearest point of distribution to the proposed nitrate plant at Muscle Shoals is probably our steam plant on the Black Warrior River, which is adjacent to ample water and coal supply. We now have installed at this plant one 25,000 KVA steam turbin unit of the most modern type, this installation haveing been completed only within the past two weeks. In addition, we have 12,500 KVA steam plant installed at Gadsden, Ala,, and hydraulic plant of 67,500 KVA installed at Lock 12 on the Coosa River, 45 miles southeast of Birmingham. These plants are all interconnected on the same transmission system.

We believe we can arrange to supply some 30,000 kilowatt capacity on any reasonable notice within six months, and this amount can easily be doubled within a year if the Government will lend its support.

We believe you are familiar with the general hydroelectric possibilities of Alabama and we will merely add that with Government aid we believe that we can give the Government any amount of hydroelectric power it may resuire within a shorter time than it can be procured anywhere in the central of eastern part of the United States.

Any further data you may desire in this connection we shall be very glad to furnish you, and we are requesting our chief engineer, Mr. O. G. Thurlow, to remain in Washington in case any further information may be desired.

Very truly yours,

JAMES MITCHELL, *President.*

Note that the earliest communication received by the witness from the American Cyanamid Co., namely, that of October 13, 1917, which was merely a preliminary outline of a possible but indefinitely-described war plant, contained an intimation that power could be secured for an emergency installation in northern Alabama by cross-connecting various power lies in that section of the country, at a price of 7 mills per kilowatt hour, but did not hint at any financing.

The American Cyanamid Co. in letter of October 29, 1917, outlined alternative plans for a Government ammonia plant, and one containing the following:

"It is contemplated, as a possibility also, that the Government would have to provide capital for the construction of 80 miles of transmission line at an estimated cost of $1,000,000."

Note, this power was estimated at 1 cent per kilowatt hour under plan 3, the following:

"Plan No. 3 is based upon the Government's loaning to the local hydroelectric power company $2,500,000, to be paid by the power company at the rate of 3 mills per kilowatt hour on the ammonia plant switchboard for current used by the ammonia plant. Until the full amount of $2,500,000 is repaid the charge for power would be 1 cent per kilowatt hour and 7 mills thereafter. It is naturally impracticable to state definitely whether such an arrangement could be made but the prospect is at least a favorable one."

"The $2,500,000 loan to the local hydroelectric power company would be expended in the installation of new hydro and steam generator units and for transmission line."

The American Cyanamid Co. on November 5, 1917, proposed a plan for a plant specified in two parts:

"Part 1 provides for an ammonia gas plant of a capacity of 500 tons of ammonia (NH_3) per week, receiving its power, approximately 30,000 kilowatts continuously, from the Alabama Power Co.

"The Alabama Power Co. will have available from the 1st of June, 1918, to the 1st of January, 1919, the requisite amount of power for part 1 without causing its customers to be deprived of power necessary for the operation of their plants. Subsequent to this latter date, however, it will be necessary to meet the growing demands for power and the contracts upon the books of the Alabama Power Co. for increase in its power deliveries and for furnishing the power required for part 1 to have installed at its Warrior River steam plant a new 25,000 to 30,000 K. V. A. turbo-generator unit with the requisite boilers and transformers. The most convenient and economical transmission of electric power from the lines of the Alabama Power Co. to Muscle Shoals is by an 82-mile transmission line from the Warrior River plant.

"The estimated cost of these addtions to the physical properties of the Alabama Power Co. is as follows:

Complete installation of a 25,000 K. V. A. turbo generator unit at the Warrior River power station	$1,250,000
Outdoor step-up transformer station, substantially 30,000 K. V. A. capacity	300,000
82-mile transmission line from the Warrior River power station to Muscle Shoals	700,000
Total	2,250,000

"The Alabama Power Co. has offered to deliver the requisite electric power for part 1 on the switchboard of the plant at Muscle Shoals for 7 mills per kilowatt hour, beginning when part 1 shall be in readiness to receive the power. The United States Government is to loan the Alabama Power Co. an amount of money equivalent to the cost of the additions to its property mentioned above and estimated at $2,250,000, and not to exceed $2,500,000, which is to be repaid by the Alabama Power Co. at the rate of 3 mills per kilowatt hour of the power delivered to the ammonia gas plant at Muscle Shoals. This will reduce the out-of-pocket cost of power used in part 1 to 4 mills per kilowatt hour and will discharge the indebtedness of the power company to the Government in substantially three years."

Attention is invited here to the mention of an offer by the Alabama Power Co. It is not known whether that referred to a communication from the Alabama Power Co. to the American Cyanamid Co. or to the proposal addressed to the Ordnance Department, division T, by the Alabama Power Co. under date of November 6, 1917.

The American Cyanamid Co.'s proposal of November 13, 1917, the proposal accepted by the Ordnance Department, contained the following:

"The site for the plant suggested as the most desirable is in the vicinity of Muscle Shoals on the Tennessee River in northern Alabama. Power is available at this site sufficient for the operation of one-half the said proposed Government plant from the Alabama Power Co., which will have available from the 1st of June, 1918, to the 1st of January, 1919, the requisite amount of power, without causing its customers to be deprived of the power necessary for their uses. Subsequent to this latter date, however, it will be necessary, in order to meet the growing demands for power upon the Alabama Power Co. for that company to install at its Warrior River steam plant a new turbo-generator unit of approximately 30,000 KVA. capacity, with the requisite boilers and transformers. The

most convenient and economical transmission of electric power from the lines of the Alabama Power Co. to Muscle Shoals is by an 82-mile transmission line from the Warrior River plant.

"The estimated cost of these additions to the physical properties of the Alabama Power Co. is as follows:

Complete installation of a 25,000 KVA. turbo-generator unit at the Warrior River power station	$1,250,000
Outdoor step-up transformer station, substantially 30,000-kilowatt capacity	300,000
82-mile transmission line from the Warrior River power station to Muscle Shoals	700,000
Total	2,250,000

"The Alabama Power Co. in a proposal dated the 5th instant, addressed to Col. J. W. Joyes, Division T, Ordnance Department, has offered to deliver 30,000 kilowatts on the switchboard of the proposed Government plant at Muscle Shoals for 7 mills per kilowatt-hour, beginning not later than the 1st of June, 1918. The United States Government is to loan the Alabama Power Co. an amount of money equivalent to the cost of the additions to its property mentioned above and not to exceed $2,500,000. The loan is to be repaid by the Alabama Power Co. at the rate of 3 mills per kilowatt-hour of the power delivered to the proposed Government plant."

The undersigned is convinced, from intimate acquaintance with the business and the records, that the Alabama Power Co. submitted no proposal dated November 5, 1917, but did submit one dated November 6, 1917—the error made either in American Cyanamid Co.'s letter or in the Ordnance Office records, but appears nominal; the essential point is considered well established that the two references are to the same paper and that but one proposal was submitted by the Alabama Power Co., namely that above listed as dated November 6, 1917, and appearing above in this record.

Aside from the mention of the Government financing a loan, etc., by the American Cyanamid Co. in its several letters, which the undersigned had always taken as indicating the result of inquiries made by the American Cyanamid Co. in order to suggest in its several proposals methods of providing power for the plants proposed, attention is invited to the letters from the Alabama Power Co. The earlier, that of November 1, 1917, reprinted above, opens by stating that the American Cyanamid Co. have advised the Alabama Power Co. that the latter's cooperation may be desirable in connection with early supply of electric energy for nitrates in northern Alabama, assures Alabama Power Co.'s hearty cooperation in any measure to facilitate the Government's ends and proceeds to indicate its power resources, to state its belief that it can arrange to supply some 30,000 kilowatts on reasonable notice within six months "and this amount can easily be doubled within a year if the Government will lend its support."

Later on appears the statement that "with Government aid we believe that we can give the Government any amount of hydroelectric power." In the more definite proposal of the Alabama Power Co., dated November 6, 1917, reprinted above and in other hearings, the power company, referring to conference with Mr. Frank S. Washburn of the American Cyanamid Co., proceeds to formulate a proposal along general lines as to supply of power. After stating that "the financing of such an installation at this time would not be warranted by the present needs of the power company," it estimates the cost of the necessary additions to its Warrior River steam plant as approximately $2,250,000, and states, "if the Government will finance the undertaking and assist in delivering, the power company will be prepared to install * * *"; also in the same letter, "the power company will undertake to set aside 3 mills per kilowatt hour for all energy supplied under this proposal until the Government has been reimbursed for all sums advanced to the company in this connection."

J. W. JOYES,
Colonel, Ord. Dept., U. S. A.

Mr. STOLL. How much power was the Alabama Power Co. to furnish the Government?

Colonel JOYES. How much did it furnish?

Mr. STOLL. How much was it to furnish?

Colonel JOYES. I can check it up right out of the contract, to be exact. Upon the termination of the preliminary operation provided——

Mr. STOLL (interposing). I just want the amount; I do not care for any discussion of it.

Colonel JOYES. To the extent of the capacity of the Warrior extension at the time, and that meant 30,000 kilowatts, approximately.

Mr. STOLL. Is that from the plant the Government built?

Colonel JOYES. It was to be furnished by the Alabama Power Co., regardless of whether they furnished it out of that plant or not.

Mr. STOLL. Suppose they furnished it out of the plant; was that a part of the contract?

Colonel JOYES. I do not think I quite get your point.

Mr. STOLL. What I mean is this: The Government furnished all the money to build the Warrior extension?

Colonel JOYES. Yes, sir.

Mr. STOLL. Was the Alabama Power Co. to furnish the current from the plant the Government built?

Colonel JOYES. At their own volition, to do that or not.

Mr. STOLL. We were to pay them for the current they furnished from our own plant?

Colonel JOYES. Yes; because they rented that plant from us and were to pay for the rental of it. They paid in two ways. In the first place, whenever we were operating——

Mr. STOLL (interposing). I do not care to go into a discussion of that.

Colonel JOYES. I can not answer your question without telling you this, that they were to pay 6 per cent per annum of the total cost, plus 2 mills per kilowatt hour that they furnished us, toward the amortization of the plant. Does that answer your question?

Mr. STOLL. They were to take the plant that was built by the Government's money?

Colonel JOYES. Precisely.

Mr. STOLL. There was no current large enough to pay for the plant itself?

Colonel JOYES. They were——

Mr. STOLL (interposing). Is that true or not?

Colonel JOYES. It amounts about to that, I think, sir.

Mr. STOLL. So if the contract had been carried out as was intended, the plant built by the Government money, they would have sold the power to the Government and thereby paid for the plant, and it would not have cost them a copper.

Colonel JOYES. It is like any other commercial transaction.

Mr. STOLL. It would not have cost them a cent.

Colonel JOYES. I think that is about right. I think in most every direction that is so. A man puts in an addition and he sells the product at the cost which will amortize his investment in the plant and make him a profit besides.

Mr. STOLL. Do you think that was a good contract for the Government?

Colonel JOYES. I consider it the very best we could do under the circumstances, and it is not an unprecedented contract by any means; there were others on the same basis precisely that were made during the war.

Mr. STOLL. Did Mr. Washburn have anything to do with that contract?

Colonel JOYES. To my knowledge, nothing whatever, directly. He did have this much by way of introduction to it, that he went and spoke to the officers of the Alabama Power Co. before he made some of his proposals to the United States, and he suggested to them that they might be called upon to supply some power.

Mr. STOLL. This contract was made under the law of July 9, 1918, which authorized the Secretary of War to sell any real estate or plants that the Government had?

Colonel JOYES. I do not know that I would be positive about that, sir. I think that law covers it.

Mr. STOLL. What law did you make this contract under?

Colonel JOYES. As to the sale? My view of that matter at the time was this, sir——

Mr. STOLL (interposing). I do not want your view; I want to know what law you made this contract under.

Colonel JOYES. I am free to say I do not know. I made it pursuant to a practice which was established in the Ordnance Department, with the advice of lawyers and with the full consent and concurrence of my official superiors.

Mr. STOLL. Do you know of any law which gave your department the right to give a concern an option on the property of the Government for a period of six years, thereby foreclosing the right to the Government to sell that property?

Colonel JOYES. I expect I can give you one, sir. The law of July 9, 1918, I think, clearly does so, sir.

Mr. STOLL. That gives you the right to sell?

Colonel JOYES. Yes, sir.

Mr. STOLL. This is not a sale.

Colonel JOYES. In my opinion it would come very close to being a sale.

Mr. STOLL. No; it is an option extending over a period of years.

Colonel JOYES. It is an option, sir; and an option is the first step, I believe, toward a sale.

Mr. STOLL. But this is a contingent option extending over a period of years. Do you know of any authority which Congress gave you or your department to give a person an option for a period of six years to shut out the right of the Government to sell the property during that period of time?

Colonel JOYES. I am not prepared to say I do, sir, so specifically as that; no.

Mr. STOLL. Do you not think this is more of a case of the spider and the fly—the Alabama Power Co. spreading its beautiful net, and you all walking right into it?

Colonel JOYES. No, sir; I do not.

Mr. STOLL. To tie you up hands and feet?

Colonel JOYES. No, sir; I do not.

Mr. STOLL. It looks very much that way to me.

Mr. GARRETT. Where was this contract from the day it was executed, I mean the day it was agreed upon; where was the paper itself from that time until November 7, 1918?

Colonel JOYES. The contract with the Alabama Power Co.?

Mr. GARRETT. Yes; the contract with the Alabama Power Co. that was agreed upon back in November or December, 1917.

Colonel JOYES. It was signed in 1918, and I think it bears the date of December 1, 1917.

Mr. GARRETT. From December, 1917, until November 7, 1918, where was this paper; in whose possession was this paper?

Colonel JOYES. There was no such thing as this paper at all those times.

The CHAIRMAN. That is all in the hearings. We have gone over that, and it is all in the hearings.

Mr. GARRETT. I am just asking where that paper was during that time.

Colonel JOYES. I mentioned that in considerable detail on Friday, that during that period we were endeavoring to arrive at a definite statement of the relations; in other words, a contract. At first I met the officers of the Alabama Power Co. in Washington and with other people tried to arrive at an agreement. Then I delegated the authority to some other people to negotiate down in Alabama, either at the Warrior plant or in Birmingham, and tried to settle a number of these details there. That came back to Washington again, and it was continued on there. It was finally brought forward considerably toward an agreement, and then went into the hands of Col. William Williams, of the procurement division of the Ordnance Department, along about July or August, 1918. The negotiations from that time on took place in his office. He went into it in great detail and proceeded to chop it up with scissors and to get it into regular arrangement and form.

Mr. GARRETT. During all this time work was being constructed?

Colonel JOYES. Yes, sir.

Mr. GARRETT. Then, as a matter of fact, all of the work, or at least 90 per cent of the work done on the Alabama Power Co.'s premises, the extension of the Gorgas plant and the transmission lines, was done without any written contract; is that not true?

Colonel JOYES. Except this——

Mr. GARRETT (interposing). Was that true or not; was the work done on any written contract?

Colonel JOYES. I believe I am justified in saying it was, to this extent, that I drew a purchase order to start the work, a written purchase order, requiring them to do thus and so, subject to later agreement as to terms of payment, etc. I signed that and it went out on the formal letterhead, and I have on that, I believe, an acceptance at the bottom, by the Alabama Power Co. If I am correct on that, and I think I am, those purchase orders bore my signature and the company's acceptance—two signatures at the bottom—which is, in effect, a contract.

Mr. GARRETT. What do you mean by purchase order?

Colonel JOYES. Those are in the record, in detail.

The CHAIRMAN. All three of the letters you read are in record?

Colonel JOYES. Yes, sir.

Mr. GARRETT. I know this is very wearisome, but you will remember, Mr. Chairman, that a Member who sits at the end of the table never gets a chance to ask his questions until the others are through, and he is placed at a disadvantage. If the Chair would alternate in calling upon the Members and begin at the tail end of the class once in a while, it would give us a chance to cover these questions without repeating so much.

The CHAIRMAN. The desire of the chairman is to get through with this. We have been running for four full weeks.

Mr. GARRETT. If the Chair will look at the record he will see that I have asked fewer questions than any other member of the committee. There are some things I want to find out, and if they are in the record already I do not want to duplicate them, but I do want to get the information.

The CHAIRMAN. They are in the record, because I heard them myself.

Mr. GARRETT. Did the Alabama Power Co. execute a bond to carry out this work?

Colonel JOYES. There was a bond given.

Mr. GARRETT. When was that executed, at the beginning of the work or at the end of it?

Colonel JOYES. I would rather have that absolutely verified and give it to you absolutely correctly in the record.

Mr. GARRETT. You do not know whether it was at the beginning or at the end?

Colonel JOYES. I would rather not say from memory; my memory is too unreliable on that, sir.

(Witness later stated that the bond was made directly after signature of contract.)

Mr. GARRETT. I want to ask you a question and see if I can get what I want to get from you in a very few words.

The Alabama Power Co., so far as the construction of this extension and the construction of the transmission line was concerned, never paid out a dollar except money that was furnished by the United States; is that true? I do not mean in the acquiring of any real property, but I mean as to the construction of the building and the transmission line. All of that was out of Government funds, was it not?

Colonel JOYES. I should say not in toto, sir. I mean that in this way, that the intent of the contract was that the Government should bear all of the expenses of such work, and it was carried out practically as intended.

Mr. GARRETT. That is a sufficient answer.

Colonel JOYES. I would not say that every cent was paid out of Government funds, for this, that, or the other thing.

Mr. GARRETT. I did not mean every cent they might have paid, for all purposes.

Colonel JOYES. There were incidental expenses that they had to spend money for, which I did not allow.

Mr. GARRETT. They were paid a fee fixed by the Government in the contract?

Colonel JOYES. Yes, sir.

Mr. GARRETT. This plant was built, then, upon their real estate?

Colonel JOYES. Yes, sir; their premises leased to us.

Mr. GARRETT. And they acquired real property upon which the transmission line was constructed?

Colonel JOYES. They did, sir.

Mr. GARRETT. Your contract provides that after the Government has done that, under section 22 of this contract, the day after it was completed the Alabama Power Co. could have demanded that the Government sell it to them, and the Government would have been required to have sold it under the contract, would it not?

Colonel JOYES. The day after it was completed—well, if they had done so at that time I think they would have had to pay us every penny we put into it.

Mr. GARRETT. I mean they had the right to compel that to be done, if they wanted to, at that time?

Colonel JOYES. I believe so, sir.

Mr. GARRETT. But the Government could not compel them to buy it before three years after the proclamation of peace by the President, could they?

Colonel JOYES. I think that is correct, sir.

Mr. GARRETT. If the war was still going on, you would have a contract in which you would be paying rent, and would have paid enough rent to have allowed the company to have paid for the plant long before this time, under the provisions of the contract?

Colonel JOYES. The Government is to pay no rent. The $60,000 lump payment covered all United States use of contractor's premises, etc.

Mr. GARRETT. And still the Alabama Power Co. would have the right to demand a sale of this property by the Government, and the Government's hands would still be tied by the Alabama Power Co. if the war was still going on; and, as a matter of fact, its hands are tied because it has not been three years since the proclamation of peace by the President, and the Government is now tied up in that contract in that way, is it not?

Colonel JOYES. I think that is so sir.

Mr. GARRETT. That is all.

Colonel JOYES. I think that is correct. I realize that is one feature that may well be open to criticism as being unfavorable to the Government. I think the reason for putting that in there was that there would be a certain period of time after the close of the war when things would be rather involved and difficult, both in connection with financing and the recovery of business, etc., and that was about the expectation we had at the time, that it would be but fair to allow anybody whom we would require to make a purchase a little time for business to readjust itself.

Mr. GARRETT. At whose suggestion was that made?

Colonel JOYES. I am very sorry I am unable to say at whose suggestion it was made. I think, in all probability, it was at the suggestion of the Alabama Power Co.; I think so, sir.

Mr. GARRETT. Colonel, there has been a good deal of discussion here in this testimony to the effect that you did not know, or whether or not there was a good deal of discussion in your conferences as to your power to do the various things that were done in regard to this matter. Did the people in your conferences ever discuss the resolution declaring war against the German Government, and in that resolution did they fail to see the language in which Congress pledged not only the resources of the Government but every resource of the Nation to the winning of that war? Did anybody ever raise the question as to whether or not that superseded any peace-time statute that might be in the way of military activity, or did they just wait for some law to be passed?

Colonel JOYES. I am not able to speak for what other people thought of, sir, but I know perfectly well that there was a general feeling expressed that the declaration of war did give a certain latitude to the Executive and to the officers who had to work under him, that it called for them to——

Mr. GARRETT (interposing). It gave the President power to call all the men in the country to arms, did it not?

Colonel JOYES. No, sir; I do not think so, sir. If you will remember, there was a great deal of discussion at that time, and there was great reluctance in getting the selective draft adopted. There was no universal draft—never was—because you would not give it to us.

Mr. GARRETT. We had the selective service law?

Colonel JOYES. If you had given us the universal draft—a universal draft of man power and of money power—there never would have been any such fool contracts, as many of the fool contracts that have been written, and many of them are fool contracts.

Mr. GARRETT. Do you say this was a fool contract?

Colonel JOYES. This has been spoken of as a fool contract, and I do not blame you, with your perspective on it at this time for calling it that. I do not call it that; I call it a fairly good provision to meet a very difficult situation which we were put into from the lack of law; that is my opinion. Many another man has felt the same way about it and has said it in much stronger language than that.

Mr. GARRETT. Your idea is that you were without authority, and this is the best contract that could be made because of the lack of more authority.

Colonel JOYES. That is right; that is my opinion, sir, whether that lay in the law or not; but it is my opinion, and the situation I found myself in, as many another man, also, sir. This is not an unprecedented contract at all. You are

talking of this contract as though I was the only man who presumed to do that sort of thing.

Mr. GARRETT. I am not presuming anything at all. This is the contract we have before us. We have not the other contracts before us, and this is the one that we are discussing. If the other contracts were before us, of course, they would be up for discussion, but they are not here.

Colonel JOYES. With your tolerance, I mention it for this one reason, that I think this was not a particular provision in this contract which you have up for your consideration; and if you choose to consider it and inquire into the propriety of my action, I think you should consider in connection with the propriety of my action that there were other contracts that did the same thing, prior to and after I did it, prior to and after the writing of this contract.

Mr. GARRETT. You mean section 22; that is the troublesome section of this contract? You mean there are other contracts that contain the exact language of section 22?

Colonel JOYES. Absolutely not; no two contracts have exactly the same identical language, but the same essential provisions, sir.

Mr. GARRETT. The other contracts you speak of gave the contracting party the right to demand of the Government that the Government sell at any time, and in those contracts the Government waived the right——

Colonel JOYES (interposing). The Government never waived any right to anything.

Mr. GARRETT. In such an optional contract as this one the contractor would have the right to demand the sale immediately, but yet the Government could not demand purchase by the contractor until some other time, after the signing of the armistice. Have you any other contract just like that?

Colonel JOYES. Why, I am unable to cite you that particular thing, sir, but I am not so sure that I can not do it.

(The witness, after consulting the records, subsequently submitted the following citations from contracts:)

1. Contract dated March 1, 1918, between the Ford Motor Co. and the United States, by the Secretary of the Navy, covering the manufacture of 100 patrol boats, contains the provision in the sixteenth clause, for construction and equipment by the contractor of "buildings, building slips, plant, and other special facilities," the total actual cost of which not to exceed $3,500,000, was to be paid to the contractor by the United States as expenditures therefor were incurred; title to all such special facilities paid for by the United States to vest in the United States. The contract further provided in the twentieth clause that upon completion of work under the contract, a compensation board of Navy officers should appraise all such facilities in two parts; the first part including all buildings, building slips, and appurtenances not susceptible of removal without destruction; the second part including plant and other facilities which are readily removable. This clause then proceeded to allow the contractor the specific option of purchasing at such appraised price or of refusing to purchase, although the word "option" did not appear.

In the event that the contractor "shall refuse to repay the amount of the appraisals, or either of them, the department shall have the right to enter upon the contractor's works and remove such parts as shall not have been accepted as are readily removable and to wreck such parts as are not susceptible of removal for their salvage value, provided that any damage done in the process of wrecking to the contractor's own property shall be made good by the department."

A careful reading of this contract does not disclose any special provision covering title to the land upon which Government-owned facilities were to be erected, but from the context it is patent that the structures were to be upon land owned by the contractor. There is no time limit upon contractor's decision.

I am informed that a supplemental contract increased the amount liable to be spent for increased facilities and also that in the final settlement of the contract the Ford Motor Co. was granted title to practically all the facilities provided by the United States, making for some of those facilities payments approximately 70 per cent of cost, for others payments at various prices ranging from 70 per cent down to nothing, and some small portion of the facilities being actually turned over to the Ford Motor Co. without compensation to the United States.

I am informed, although I have not verified the fact, that provisions quite similar to the foregoing were used in a number of Navy Department war contracts.

2. Contract No. CS 105 made by the Chief of Ordnance with the Morgan Engineering Co., of Alliance, Ohio, for eighty 12-inch mortar carriages, model of 1918, dated January 26, 1918; execution completed June 17, 1918:

* * * * * * *

The contractor agrees to provide at the best prices obtainable upon land now owned by the contractor, indicated upon Schedule 2 and described as follows, to wit, * * * the following:

Suitable temporary factory building of approximately 210,000 square feet floor area, at a cost not exceeding $1,150,000, in accordance with the plans and specifications referred to in Schedule 3, hereto attached, being a copy of a certain approved contract by the contractor and George A. Fuller Co.

And the United States Government, through the contracting officer, agrees to pay the contractor the actual cost of such temporary buildings weekly from time to time as the work of construction progresses upon statements of work done, furnished by the contractor weekly during the progress of the work and approved by the contracting officer.

The above mentioned plans and costs include all cost and charges incurred by the contractor for the purpose of providing complete buildings ready for the installation of the necessary machinery without additional foundation, but with railway tracks and sidings to the buildings aforementioned and adjacent storage yards used in connection therewith.

The United States Government agrees to pay all State or local taxes levied or assessed upon such buildings and the land occupied by such buildings, storage yards, etc., during such period as said buildings may remain upon said land and be the property of the United States.

Payment of these items to be made by the contracting officer to the contractor after such payment has been made by the latter, provided that such payments of taxes shall be in lieu of any and all rental charges for the use of said land.

It is distinctly understood and agreed that said buildings, tools, and equipment are and shall remain the property of the United States Government, and that said United States Government will remove or cause same and every part thereof to be removed from the property of said contractor, and leave said property in the same condition as before said buildings were erected thereon, without cost or charge of any kind to said contractor, within one year after peace is declared with the German Empire, provided that if the United States shall desire to sell said buildings without removing them, then the contractor shall have the first right to purchase same at the highest price which the United States may be able to obtain for same, and provided further that the time of removal of said buildings may, at the option of the United States, be further extended until one year after the completion of such contracts as may be entered into between the contractor and the United States either before or after the end of the present war.

The contractor, by and with the assistance and approval of the contracting officer, will purchase at the best prices obtainable (or will manufacture) cranes, tools, equipment, shop furniture where necessary and possible, and office furniture and equipment necessary for the purpose of operating the plant to be operated in said buildings under the terms of this agreement, and not to exceed in cost the sum of $1,800,000. The contracting officer agrees to pay the contractor monthly, or oftener, the cost of all such machinery, tools, and equipment aforementioned as same may be purchased or manufactured from time to time by the contractor, upon bills furnished by the contractor for such purchases.

* * * * * * *

It being hereby agreed that for such machinery, tools, and equipment as the contractor may himself manufacture in the present plant he shall be paid the following prices: All cost of (1) direct material entering into the construction of such articles; (2) cost of all direct labor entering into the construction of such articles; (3) percentage of overhead obtaining at the time of manufacture as shown by the cost records of the contractor; (4) 10 per cent upon the sum total of the foregoing three items.

All such tools and equipment aforementioned to remain the property of the United States Government and to be removed by the United States Government from the property of the contractor within the period provided for the removal of the buildings aforementioned.

* * * * * * *

THE MORGAN ENGINEERING CO.,
By W. H. MORGAN,
President, Contractor.

Attest:

W. H. RAMSEY, *Secretary.*
SAMUEL MCROBERTS,
Colonel, Ordnance Dept., U. S. National Army, Contracting Officer.
By CHAS. N. BLACK,
Lieutenant Colonel, Ordnance, National Army.

Witnesses:
A. F. MORRIS.
BOONE G. HARDING.

A true extract copy of contract on file in the office of the Chief of Ordnance.
JOHN G. BOOTON,
Major, Ordnance Dept.

3. Contract No. CF 339 made by the Chief of Ordnance with Dodge Bros., of Hamtramck, Mich., for 4,544 recoil mechanism; complete, dated November 1, 1917; execution completed November 13, 1917:

* * * * * * *

ARTICLES CONTRACTED FOR.

ARTICLE I. The contractor agrees to make for the United States the following articles: (*a*) 3,120 recoil mechanism, complete, for 155 mm. Howitzer (Schneider); (*b*) 1,424 recoil mechanism, complete, for 155 mm. G. P. guns (Filloux).

* * * * * * *

ART. II. Time being of the essence, the contractor agrees to provide, with the utmost dispatch, at the best prices obtainable, upon land now owned by the contractor, described as follows, to wit: * * * the following:

1. Suitable factory buildings of approximately 500,000 square feet floor area, at a cost not exceeding $1,500,000 as per plans and specifications hereto attached marked Schedule 2.

And the United States Government, through the contracting officer, agrees to pay the contractor the actual cost of construction of such buildings monthly from time to time as the work of construction progresses, upon estimates of work done, furnished by the contractor monthly during the progress of the work, and approved by the contracting officer plus the sum of 5 per cent on the actual cost of said buildings as a charge for organization equipment, building equipment and supervision furnished by the contractor in the construction of said buildings. Said charge of 5 per cent to be paid by the contracting officer to the contractor upon the final completion of said buildings.

And the United States Government, through the contracting officer, also agrees to pay all costs and charges incurred by the contractor for the purpose of procuring railway tracks and siding to the buildings aforementioned and adjacent storage yards used in connection therewith, and also all State or local taxes levied or assessed upon such buildings and the land occupied by such buildings, storage yards, etc., during such period as said buildings may remain upon said land.

Payment of these items to be made by the contracting officer to the contractor within one month after such payments have been made by the contractor.

Such payments of taxes to be in lieu of any and all rental charges for the use of said land.

It being also understood and agreed that any sums which may hereafter be refunded by the railroads on account of such trackage aforementioned, shall be paid to the United States Government.

It being distinctly understood and agreed that said buildings are and shall remain the property of the United States Government, and that said United States Government will remove or cause same and every part thereof to be removed from the property of said contractor, and leave said property in same condition as before said buildings were erected thereon, without cost or charge

of any kind to said contractor within six months after peace is declared with the German Empire, provided that if the United States shall desire to sell said buildings without removing them, then the contractor shall have the first right to purchase same at the highest price which the United States may be able to obtain for same.

* * * * * * *

By JOHN F. DODGE,
President, Contractor.

Attest:

A. L. MCMEANS, *Secretary.*

J. H. RICE,
Lieutenant Colonel, Ordnance Department,
United States Army, Contracting Officer.

Witnesses:
F. J. HAYNES.
GEO. L. LOHRER.

A true extract copy of contract on file in the Ordnance Department.

JOHN G. BOOTON,
Major, Ordnance Department.

1. Contract No. CF 420, made by the Chief of Ordnance with Mesta Machine Co., of Pittsburgh, Pa., for 9,000 tons of artillery forgings, dated January 11, 1918; execution completed March 21, 1918:

* * * * * * *

2. The United States will pay to the contractor the actual cost of increased facilities as specified in Schedule B to an amount not to exceed $592,429.

* * * * * * *

4. Six months after the receipt of written offer of sale from the Chief of Ordnance, but not later than six months after the termination of the war between the United States and the Imperial German Government or its allies, the contractor agrees to purchase and the United States agrees to sell the additional facilities called for in this contract belonging to the United States at a price of $242,458. In any event, however, the contractor shall not be required to pay for such facilities prior to December 31, 1918.

5. In the event of the termination hereof, the United States agrees to either complete the additional facilities and sell them to the contractor, as specified above, or to restore the contractor's plant as it was originally before alterations were made for the addition of the addional facilities.

* * * * * * *

3. It is further agreed that the United States may accept, in full satisfaction of this contract, such lesser quantities of the articles herein contracted for as the contracting officer may designate; but in this case the contractor's obligation to purchase additional facilities at the price specified shall cease, unless the United States shall place orders with the contractor for other articles that can be produced by these facilities equal in value to the value of the portion of the contract canceled.

* * * * * * *

MESTA MACHINE CO.,
GEO. MESTA, *President.*
SAMUEL MCROBERTS,
Colonel, Ordnance Department, U. S. National Army.
By CHAS. N. BLACK,
Lieutenant Colonel, Ordnance, National Army.

Witnesses:
H. F. WAHR, *Secretary.*
ESTELLA SWAVELY.

A true extract copy of contract on file in the Ordnance Department.

JOHN J. BOOTON,
Major, Ordnance Department.

Mr. GARRETT. I think you will agree with me, under this contract, who else could buy this property from the Government except the Alabama Power Co.?

Colonel JOYES. Nobody. But there was many another contract that contained that same provision, in that same situation. I have five of them on the table.

Mr. PARKER. So far as not already in the record, please insert everything in the way of correspondence, which constitute a part of the material which you have handed to Colonel Williams.

Colonel JOYES. The material I handed to Col. William Williams?

Mr. PARKER. Yes. It consisted largely of correspondence between you and the Alabama Power Co.; and, so far as it is not in the record, I want it put in. Second, please, at your leisure, state why——

Colonel JOYES (interposing). I expect——

Mr. PARKER (interposing). I am not asking you to answer the question now. Please, at your leisure, state any reason why the Alabama Power Co. ought not to pay interest on the cost when they have possession of the plant and are operating it.

The CHAIRMAN. If you will kindly insert the answers to those questions at your leisure, that is all we will require this morning, Colonel. We are very much obliged to you.

(The matter, above referred to, is as follows:)

[Memorandum to Procurement Division in re proposed construction and operating contract with Alabama Power Co.]

SEPTEMBER 5, 1918.

1. In order to obtain, through the medium of the Alabama Power Co., an auxiliary power station for the power requirements of the Nitrate Division, Ordnance Department, it became necessary first to construct a power station and transmission line with Goverment moneys; and, second, to contract for the operation and ultimate disposal of such properties.

2. The construction and the work orders, under which the same has proceeded, are covered by the first portions of the attached tentative contract, dated May 20, 1918, and the schedules A, B, and C, relating thereto.

3. All materials and apparatus are covered by purchase orders, approved or authorized previous to August 31, except certain as yet unauthorized work, which, however, is mentioned in schedules A, B, and C.

4. The construction of the Drifton Branch Railroad extension, approximately 8,000 feet of new line, was not included in the above draft of contract, and no work or purchase thereon has occurred. The Alabama Power Co.'s representatives have agreed to provide the right of way and materials and to perform that work under this contract with an upset price to the United States of $30,000, plus the cost of the track-rail material. The future maintenance of such extension to be at the cost of the Alabama Power Co., but performed, if desired, by the United States by the Railroad Administration. (Embody this in schedule C.)

5. The operating section of the contract to be along the following lines:

6. The 30,000-kilowatt unit and other facilities to be installed at Warrior at the expense of the United States. Also transmission line to nitrate plant No. 2. Both on property and right of way of Alabama Power Co.

7. The power company shall pay the United States as annual rental for the use of the facilities provided by the United States hereunder, an amount equal to 6 per cent of the cost to the United States of the proposed facilities (exclusive of transmission line) during such periods as the United States may require from the service contemplated under this agreement; such rental payment to be made in equal monthly installments.

8. In determining the amount on which the power company shall pay interest, there shall be deducted from the amount of the expenditure by the United States for the construction of the Warrior extension the amount of the accumulated recapture fund in the hands of the United States resulting from the proposed retention of 2 mills per kilowatt-hour, under the provisions of the contract, and interest charged on the net of such advance after such deduction, interest computation to be made semiannually on the 1st day of January and July of each year.

9. Power company to operate the power plant at Warrior and to supply current for operation of United States nitrate plants No. 1 and No. 2, near Sheffield, Ala., at 7 mills per kilowatt-hour, delivered to the switchboards at such plants, 110,000 volts, 3-phase, alternating current. The amount of energy available to the United States for such operation is to be that corresponding to the capacity of such unit and any other power which the power company may have available for such use.

10. The use of current by the United States should not be confined to "Sheffield" nor to "near Sheffield," since, for example, the proposed quarry operation will probably be near Russelville, some 30 miles to the south.

11. During such periods as the United States shall require the service from the power company above provided the United States shall guarantee a minimum payment for current to be supplied pursuant thereto of $30,000 per month.

12. The United States may discontinue the demand for such service on 60 days notice at any time, in which event the United States shall, during the period of such discontinuance of demand, be relieved of the obligation as to minimum monthly payment hereunder, and the power company shall correspondingly be relieved of the payment of rental for the facilities of the United States during the period of such discontinuance of demand for service. Unless the period of any such discontinuance of service exceeds 60 days, there shall be no change in the minimum payment or rental charges.

13. Such service to be restored on 60 days written notice by the United States, after which the minimum payment and rental charges shall become effective.

14. Rate for use of 30,000 kilowatt units for purposes of Alabama Power Co. during periods of suspension of service to the United States, under provisions of contract, to be 1½ mills per kilowatt-hour generated by such unit. Boilers installed at expense of United States to be used only to supply steam to the 30,000-kilowatt unit.

15. The 30,000-kilowatt unit and other facilities and transmission line and substations to remain the property of the United States, but of the above payment of 7 mills per kilowatt hour the amount of 2 mills per kilowatt hour is to be retained by the United States.

16. When the amount so retained by the United States aggregates the amount of the cost to the United States of the 30,000-kilowatt unit and other facilities provided at the expense of the United States, and installation expense thereof exclusive of the transmission line and Sheffield substation, then the title to the 30,000-kilowatt unit and other such facilities, except the transmission line and Sheffield substation to pass to the power company.

17. The United States to have the option at any time not less than three years after the termination of the war or termination of the supply of power hereunder, whichever may be the later date, to elect that the power company shall take over the 30,000-kilowatt unit and other facilities provided at the expense of the United States at a value to be determined by appraisal, such appraisal to take into consideration the value of the property to the power company under the then conditions. The power company to have a reasonable period to make payment of the amount due on account of such sale, not less than five years or more than 10 years; deferred payments to bear interest at the rate of 5 per cent and title to property to remain in the United States until paid for in full. Credit to be given power company for amounts retained under provisions of 15.

18. Power company to have five years in which to repay amount due under appraisal at 5 per cent interest, payable semiannually, with an option for five years additional at 6 per cent interest. Company may anticipate payments at its option.

19. Power company to assume full operating responsibility for the operation of the plant and to maintain apparatus in first-class operating condition, and shall make good any damages due to use, accident, or otherwise.

20. Power company to agree to continue to supply power for the requirements of the United States at reasonable prices, taking into consideration capital investment, operating costs and reasonable depreciation, after recapture of property by power company.

21. If the United States is prepared to furnish coal to power company at a price lower than that on which energy rate is based, under adjustment clauses, power company will accept such coal, on reasonable notice with reference to power company's obligations to accept coal from other sources. Energy rate to be adjusted correspondingly for power generated by coal so furnished by United States.

22. Energy rate based on standard coal at $2.30 per ton. Adjustment up and down for variations in coal cost.

23. Contract to become effective on 30 days' written notice by the United States, such notice to be given not later than December 1, 1918, provided the proposed facilities at Warrior are completed for operation at that time.

24. Temporary power to be furnished in the meantime on basis $12.50 per month per 1,000-kilowatt maximum demand, plus 5 mills energy charge, as provided in contract draft May 20, 1918.

25. Transmission line to be maintained by power company but policing transmission line to be at expense of United States.

Col. J. W. JOYES,
Ordnance Department, United States Army.

[Memorandum.]

In reply to Judge Parker's question as to why Alabama Power Co. should not have been required to pay interest on cost, I would say that we thought the company should pay interest and contract aims to require interest, as follows:

Whenever United States has a "demand" right for power, the contractor must pay monthly interest at 6 per cent per annum on entire cost. As facilities were for the United States requirements and as United States interests prevented contractor's agreeing to sell power regularly from Warrior extension it was felt to be only fair to remit such payment when United States suspends its purchases of power. But, in that case, contractor must pay 1½ mills for each kilowatt hour which it generates itself, for its uses, by the operation of the Government's facilities. This 1½ mill would amount to more than 6 per cent per annum if the contractor used the facilities to their full capacity continuously.

Payment for full use facilities below: 365 by 24 by 30,000 at $0.0015, $394,200. Interest at 6 per cent on $3,851,880.99, $231,112.86.

Interest on cost of Warrior extension, Warrior substation, and Drifton Railroad:

Furthermore, the contractor is required at all times to maintain the properties in first-class repair, to keep them insured, and to make good all damages, etc.

In returning the proof of the record of my testimony in hearings before your committee on Friday, March 10, and Monday, March 13, 1922, I believe it necessary to submit the following brief statement as to my general attitude and opinion in regard to the contract with the Alabama Power Co.

The trend of previous hearings and of the questions propounded to me naturally led to presentation of facts and some argument by me in support of the legality and justice of the contract, such as might possibly be misconstrued into an advocacy of the interests of the Alabama Power Co.

Such an advocacy of this or any other interest in opposition to that of the United States Government is far from my intent. On the contrary, I believe that the legal rights and proper equities of the United States should be paramount, and that in the contract are to be found the best means of enforcing such rights and protecting such equities of the United States.

I therefore advise that the contract be respected and enforced and urge that the policy of the Government be to secure in the manner prescribed in the contract the most advantageous settlement possible.

Respectfully,

J. W. JOYES,
Colonel, Ordnance Department, United States Army.

STATEMENT OF DR. CHARLES L. PARSONS, CONSULTING CHEMIST, WASHINGTON, D. C.

The CHAIRMAN. We will now hear Dr. Parsons. Will you kindly state your name in full, also your address, your present business, and what position you occupied during the war?

Doctor PARSONS. I am Charles L. Parsons, and my address is 1709 G Street, Washington, D. C. I am a consulting chemist. During the war I was quite closely connected with the whole nitrogen situation and a number of other matters that were handled by the Bureau of Mines of the Interior Department. I was chief chemist and chief of the division of mineral technology of the Bureau of Mines. In the summer of 1916 I was transferred to the War Department at the request of General Crozier as their chief chemical engineer to go to Europe and investigate the whole question of nitrogen fixation and to report back to him my conclusions. After that I was made a member of the

nitrate commission, consisting of Admiral Earle, Dr. W. R. Whitney, Dr. A. A. Noyes, Dr. Gano Dunn, and I think the other member was Mr. E. E. Summers, of the War Industries Board. I am not quite sure of that, but I have the list exact, if you desire it.

I was consulted in connection with technical matters with reference to new plants after plant No. 2 was installed at Muscle Shoals, when such matters were referred to the commission for advice. I was also with the interdepartmental committee, consisting of the Secretaries of Interior, Agriculture, and War, at the time they took their special trip through the South to view the various localities proposed for the first nitrate plant, which should be referred to as plant No. 1, and the trip had nothing to do with plant No. 2. Afterwards I was in constant consultation with them, and was on the various boards that had to do with these matters.

I am, of course, more especially informed on the technical side, or the chemical side of the situation. I do not think I can give you any testimony which would be worth while on water powers or law or contracts. While I will be very glad to reply to any question of fact, of which I have knowledge on those matters, I do not think I could give you an opinion, as you have already had men before you who are much more expert on those matters than myself.

There is one thing that I ought to mention. I have been, I think, before every committee that has had this matter up for consideration. I was, after I left the Bureau of Mines in the latter part of 1919, connected in a consulting chemical capacity with the Atmospheric Nitrogen Corporation, whose plant is now operating at Syracuse; I remained with them in a consulting capacity until August 15, 1921, when their plant was in full, successful operation, and my connection with them ceased with the understanding that I was entirely free thereafter, and I am before you as a free lance, without anyone influencing my testimony.

The CHAIRMAN. That plant at Syracuse is the one that has been referred to as the fixation plant No. 1, which is different from the plants operated by the cyanamid process?

Doctor PARSONS. You are correct.

The CHAIRMAN. What is the name of that process officially?

Doctor PARSONS. It is generally spoken of as the General Chemical Co.'s process, or, if you wish to go back to a more general term, it is a modification of the Haber process. There are three modifications of the Haber process, which differ slightly, and which I will explain.

The Haber process was first developed in Germany. When the war began they were making 7,000 tons of fixed nitrogen per year by the Haber process there. Their patents called for operation under pressure from 100 atmospheres to 300 atmospheres, or to put it in pounds, from 1,500 pounds per square inch to 4,500 pounds per square inch—very high pressures.

The process consists in the direct combination of nitrogen and hydrogen to form ammonia, and the greatest difficulty in the process to-day is to procure the hydrogen and to procure it cheap. Modifications of that process have been devised, but information could not be obtained in 1917 from Germany which would enable us to put in the German process per se.

The General Chemical Co., in order to be free from the German patents, devised a process which worked at a pressure of 1,500 pounds per square inch. In France Claude has devised a process which works at pressures greater than 300 atmospheres, in fact, he works at pressures of 900 atmospheres, which would be nine times 1,500 pounds per square inch—a very, very high pressure. He is working on a comparatively small scale, but successfully, in France. Otherwise those processes are much alike, and they are often spoken of in the general term as the Haber process. It is really the synthetic ammonia process, of which there are three modifications used in the world to-day. They are replacing the other processes, and, so far as we can now see, within a few years this will be the only process used for nitrogen fixation.

The CHAIRMAN. Did you do anything at Muscle Shoals wth regard to nitrate plant No. 2?

Doctor PARSONS. With reference to nitrate plant No. 2 I was called into the first conference held in General Crozier's office, and the details of that conference are set forth in the records of Mr. Graham's committee. I differed from nearly everyone else there that night as to the advisability of installing plant No. 2 at all. I went back the next day and wrote a letter to General Crozier giving my full opinion and reasons therefor and mailed it to him, and after that I had nothing to do with plant No. 2.

The CHAIRMAN. What was your objection to that plant?

Doctor PARSONS. My objection to that plant was that it was a process that was becoming obsolescent. I did not feel at that time we had reached a stage where the installation of the plant was necessary for war purposes. I believed we could procure our immediate needs from the ammonia produced by the destructive distillation of coal, of which we are making something like 100,000 tons every year, and at that time, if I remember correctly, about 70,000 tons, and I thought that ammonia could be diverted temporarily without injury to the other industries of the country and could be oxidized and made into the nitric acid that we might need for any short period of emergency. So I favored installing at first the process of the General Chemical Co., a modification of the Haber process, and installing it as a small unit so we could determine how it would operate and the necessary details for its operation. I will have more to say about that later.

The CHAIRMAN. What did General Crozier say with regard to that matter?

Doctor PARSONS. He accepted the advice of the Ordnance officers and went ahead with plant No. 2. If you wish the letter I wrote him at that time it is in these hearings on the Muscle Shoals development, and I can read it to you, or you can put it in the hearing, or simply refer to it.

The CHAIRMAN. Is it very long?

Doctor PARSONS. It is approximately one page.

The CHAIRMAN. Will you kindly read it? What hearing is that which you are about to read from?

Doctor PARSONS. This is a hearing on the sundry civil appropriation bill for 1922, on the Muscle Shoals (Ala.) development.

The CHAIRMAN. That must have been this year.

Doctor PARSONS. The hearing was last year.

The CHAIRMAN. What committee did you appear before?

Doctor PARSONS. I appeared at Chairman Good's request before the subcommittee on the sundry civil appropriation bill, at the time the government-operated nitrogen corporation was being considered.

The CHAIRMAN. Was that in 1922?

Doctor PARSONS. That was on the appropriation bill for 1922.

Mr. PARKER. What date did you appear?

Doctor PARSONS. On Wednesday, February 16, 1921.

The CHAIRMAN. Will you kindly read the letter?

Doctor PARSONS [reading]:

DEPARTMENT OF THE INTERIOR,
BUREAU OF MINES.
Washington, October 31, 1917.

CHIEF OF ORDNANCE, WAR DEPARTMENT.

DEAR GENERAL CROZIER: Referring to the conference in your office Monday evening regarding the necessity of building additional ammonia plants for the production of ammonium nitrate for shell filler, I have given further careful thought to the arguments presented.

Basing my conclusion on the premises that 600,000,000 pounds of shell filler are required for the year beginning September 1, 1918; that the necessary forgings can not be obtained for increasing the size of the ammonia plant to use the process of the General Chemical Co.; and that picric acid by the chlorbenzol process can not be produced in sufficient quantity to meet the deficiency, I agree that it may be necessary to install plants for the production of cyanamid and ammonia. I believe that a thorough canvass of the picric acid situation and the ability to divert 50,000 tons of ammonia from coke plants should first be made. I am strongly of the opinion that the cost figures for the production of ammonia as presented in the estimates of Mr. Washburn can not be attained with water power at 1 cent per kilowatt hour and the heavy amortization charges required on the proposed plant.

While it may be necessary in the present emergency to resort to every known process for the production of ammonia, including the cyanamid process, as was done in Germany, I can not feel that the time has arrived when the country is driven to the strait of accepting any such proposition as that proposed by Mr. Washburn, president of the American Cyanamid Co.

Mr. Washburn proposed to furnish the technical advice and engineering experience, the patent rights, and the good will of his company at cost, to build, at Government expense, a plant to produce from 500 to 1,000 tons of ammonia per week at a cost for the larger amount estimated at $16,000,000, including

electricity transmission lines. He contemplates no personal expenses, financial risk, or guaranty, and is reimbursed for the time and expense of his employees. He claims to charge no royalty during the period of the war, or for three years in case the war ends sooner. He agrees to furnish the electricity at 1 cent per kilowatt-hour, or approximately $64.50 per horsepower-year. On the electricity he presumably makes a profit, how great is unstated—but his first estimate was 7 mills per kilowatt-hour, as given to Captain White.

His proposal contemplates his ultimate, if not immediate, ownership of the plant, without cost of any kind to himself or his company. This is to be accomplished by charging against the ammonia produced during a three-year period an amount sufficient to amortize the total construction costs of the plant, which is, of course, to be kept in proper operating conditions.

Plant costs at the present time are excessive, but deducting 50 per cent of the estimated cost of plant as a proper loss to the Government to cover emergency conditions, there remains $4,000,000 on the 500-ton plant, or $8,000,000 on the 1,000-ton plant of actual plant value under normal conditions. These figures correspond almost exactly to the $200 per ton nitrogen capacity per year construction costs given by the American Cyanamid Co. to the nitrate committee as a proper estimate for the construction cost of a cyanamid plant, not counting water-power installation, on prewar conditions—conditions which will probably never be reached in this country again.

Even admitting for the sake of agrument the correctness of the construction estimates, I have no faith in the estimates for ammonia product on costs as presented previously by him or as proposed in this latest communication. I have no hesitancy in saying that the ammonia costs will be considerably higher than estimated and that ammonia by the cyanamid process has never been made by any other manufacturer of cyanamid at anything like these figures, allowing for present prices for power, labor, and other raw materials. I wish to place myself on record as stating that they will be exceeded if the Government builds a plant and it is operated by the Government or by the American Cyanamid Co. as proposed.

I ask particularly that you note the following:

1. That the American Cyanamid Co. will obtain through ownership of the plant a profit equivalent to from $4,000,000 to $8,000,000 at the lowest estimate for the three-year use of their process, without financial risk to themselves or guaranty or responsibility of any kind whatsoever.

2. The basic patents for the cyanamid process will soon run out.

3. The above profit is equivalent to a royalty of $50 per ton of ammonia produced, or approximately $40 per ton of nitrogen, including that used for munitions.

4. That the royalty on the synthetic process is nothing on munitions and only $5 per ton on nitrogen if the product is used for fertilizer.

5. That profits on electricity sold will be paid to Mr. Washburn and his associates. The extent of this profit is unknown.

6. That a probable 10 per cent profit will have to be paid to some construction company that builds the plant.

7. Most important of all, Mr. Washburn's proposal plans to leave the cyanamid industry in his hands after the war is over for the production of fertilizer. It plans unquestionably, since he wishes it located at Muscle Shoals, to force the Government to subsidize the continuation of a process which has never commercially found place in the United States, by granting to its horsepower in quantity far below the market price of horsepower anywhere else in America, thus rendering possible a continuation of a process which can not hope to exist commercially in full and free competition with more modern processes for nitrogen fixation. I believe in the development of water power at Muscle Shoals, but not for the benefit of the American Cyanamid Co. or for purposes of nitrogen fixation, which can be accomplished much cheaper otherwise.

If the cyanamid process must be resorted to it should be remembered that the process is an old process, well known to many engineers both in this country and abroad; that the larger part of the process consists in the production of calcium carbide; that the Union Carbide Co. and other carbide companies are equally able, if not better able, to construct this portion of the plant; that engineers can readily be obtainable, probably in this country, but certainly in Norway, to plan, construct, and operate cyanamid plants and plants to convert this cyanamid into ammonia; that the basic patents are soon to run out, and any patent suit against the Government would undoubtedly be settled at a comparatively low figure; that electric power to the extent of about 20,000 horsepower can be purchased at Keokuk for $20 per horsepower year, and in the far West is available and can be purchased in quantity at approximately $12 per horsepower year; and that power can be produced by steam plants for from $40 to $45 per horsepower year.

I, therefore, can see no reason other than the establishment of a cyanamid monopoly favorable to the American Cyanamid Co. for locating this plant at Muscle Shoals at a present horsepower cost of $64.50 per horsepower year. This is particularly true when it is remembered that the cost of horsepower is one of the chief controlling factors in the cost of the product.

I do not understand that it is your expectation or plan to accept the proposal as made, but I feel very strongly that if it has become necessary to erect plants for the production of ammonia through cyanamid these plants should belong to the Government. If operated for fertilizer purposes after the war the Government would then be in a position to direct the use of this plant so as to preclude individual subsidy.

I trust you will pardon the length of this communication, but I feel it my duty to place before you clearly my conception of the action proposed.

Yours very truly,

CHARLES L. PARSONS.

The CHAIRMAN. When was that written to General Crozier?

Doctor PARSONS. On the 31st day of October, 1917. That was the day after the first meeting that was held in his office. I was there until 2 o'clock in the morning, and you will find the details of that in the other hearings. I never had anything to do with that nitrate plant after that. Mr. Washburns' proposals were greatly modified, and they got very much better terms before they finally signed the contract, as you know. But the fact remains that what I felt then about the reliability of the cyanamid process as a process for the fixation of nitrogen not only exists to-day, but every prophecy I made there has been fulfilled.

The CHAIRMAN. Did General Crozier reply to that letter?

Doctor PARSONS. I am not sure; he may have acknowledged it, but it was no more than an acknowledgment.

The CHAIRMAN. Do you know whether Secretary Baker saw your letter?

Doctor PARSONS. I do not know; no. I know Secretary Baker knew of my feelings in this matter.

The CHAIRMAN. How did he know that; did you have conferences with him?

Doctor PARSONS. I had frequent conferences with him; we went on the trip together in a private car when we went on the first inspection trip to Muscle Shoals, and we were out some 10 days together, and I was quite closely in touch with him and had letters from him and sent letters to him on nitrogen fixation matters during the war. Secretary Baker's attitude, in my opinion, was entirely correct from the beginning to the end of the situation.

The CHAIRMAN. Did he agree with you on these matters?

Doctor PARSONS. Secretary Baker agreed, in that he accepted, as did the other two Secretaries, the report of the committee which the committee submitted, and which was practically the report which I made to the Ordnance Department, and the interdepartmental committee unanimously were for the report and were for the location of the plant at North Chattanooga, on the basis that no great amount of power was needed for nitrogen fixation. Plant No. 1 was ordered to Muscle Shoals by the President, as has been clearly brought out in the previous hearings, the details of which you will find not only in the hearing referred to but in the hearings held by Mr. Graham's committee on war expenditures.

The CHAIRMAN. Did the President order the work to begin down there in the letter of his of February 18, 1918?

Doctor PARSONS. I think it would be better, if you want that data, to get it exact on the report of the interdepartmental committee to General Crozier, suggesting that the report be accepted and that the plant be put at North Chattanooga. General Crozier wrote about 10 days after the receipt of that report that the whole project had been sent to Muscle Shoals by the President's order. You will find the detail in Mr. Graham's hearing. It is referred to in these hearings and the pages given.

The CHAIRMAN. You can put that into the hearings when you look it up.

Doctor PARSONS. The page reference?

The CHAIRMAN. Yes.

Mr. MILLER. The reference to where it can be found in the hearings of Mr. Graham's committee.

Doctor PARSONS. I will do that.

The CHAIRMAN. The President, then, gave orders to proceed with the work at Muscle Shoals as a war proposition, did he not?

Doctor PARSONS. I do not so understand it. The order was first given in reference to plant No. 1, and it was under the national defense act. He ordered plant No. 1 to Muscle Shoals, when all the boards had favored the location of it elsewhere. That was some few months before plant No. 2 was decided upon at all. When the Ordnance Department decided upon building plant No. 2, it naturally followed after, because plant No. 2, if it were to have any success at all, required for its operation considerable power. There was no power developed at Muscle Shoals at that time. During the war they had to get power from a rapidly built steam plant or from some power company that might furnish it. It was generally understood that by ordering it to be built at Muscle Shoals the power at Muscle Shoals would be developed.

The CHAIRMAN. Was the Wilson Dam begun about that time also in connection with the Muscle Shoals development?

Doctor PARSONS. I am afraid I have not those dates clearly in mind, but the Wilson Dam, as I understand it, was not started for some time afterwards. I think it was approximatetly a year after, but that can be easily ascertained.

The CHAIRMAN. Is it not a fact that when the President ordered that work started it was investigated as to whether the completion of those dams could be considered a war emergency, and Mr. Barney Baruch, who was then at the head of the War Industries Board, decided it was not a war emergency, and ordered the work on those dams stopped?

Doctor PARSONS. I would rather some one else would answer that question. I do not know definitely, without going into the record. I think you will find it in the record, answered by others. I know that later there is no question whatever that the activities on the dam were ordered stopped by somebody. I think it was on the basis that it would not be needed during the war. Later, the question came up before the Nitrate Commission, of which I was a member, in regard to building further plants, for there was a great fear, and a natural scare from the submarine raids, that we might be cut off entirely from the Chilean nitrates. Then they considered the building of plant No. 3 and plant No. 4, and I was called in again, for the first time on that situation, as a member of the Nitrate Commission. At that time I voted for the installation of plant No. 3 and plant No. 4 as a cyanamid plant, provided they would put into the vote the following words:

"*Resolved*, That in view of the present emergency and the necessity for obtaining ammonia, the cost being secondary in the present emergency, the commission recommends that the new nitrate plant, known as plant No. 3, be constructed and operated under the cyanamid process."

That was simply because we had the data and the trained men to deal with the situation, although we knew that the cost would be high and that it would be a very difficult thing to do. The commission voted unanimously as quoted.

The CHAIRMAN. But they never carried out that proposition and plant No. 3 was never built.

Doctor PARSONS. Plants Nos. 3 and 4 were started, and afterwards, I think, they expended on plants Nos. 3 and 4 approximately $20,000,000, and then scrapped them both before they were completed, and the war had ended.

I can now reply to your previous question, because the information is before me in these hearings. The page in the hearings of the Graham committee is page 2578, and in the hearings on the sundry civil bill for 1922 you will find a copy of the data on page 216, if you wish it inserted——

The CHAIRMAN. Is it very long?

Doctor PARSONS. It is about a quarter of a page.

The CHAIRMAN. Will you kindly read it for the record?

Doctor PARSONS. Mr. Good, speaking, says:

"Right in that connection, in the hearings before the Committee on War Expenditures, on page 2578, appears the following, the question being asked by Mr. Graham:

"'On the 19th of September, 1917, the record shows a memorandum was given to the Chief of Ordnance signed by Colonel Joyes, of the Ordnance Department, and a memorandum was made to you on the 20th of September, 1917'—

"This question was directed to the Secretary of War—

"'by General Crozier about this subject. In this memorandum that General Crozier makes I find the following—this is simply the summary of his conclusions:

"'I think that the examinations made indicate the limit of choice to four localities, viz: Chattanooga, Knoxville, Sheffield, and North Birmingham, and after fully considering all the aspects of the matter it is my opinion that the site at North Chattanooga, Tenn., having been adjudged first from the fertilizer standpoint and next from the compromise standpoint, is best fitted for the constructions now contemplated, and I recommend its adoption and the purchase of a tract of 500 to 600 acres.

"'WILLIAM CROZIER,

"'*Brigadier General, Chief of Ordnance, United States Army.*'

"On the margin of that memorandum, dated August 6, 1917, is a postscript or a sort of note:

"'The original letter, 471,86/2020–Nitrogen–j/z, dated September 20, 1917, a memorandum for the Secretary of War signed by William Crozier, brigadier general, Chief of Ordnance, United States Army, copy of which you already have been furnished, bears the following postscript in long hand:

"'"The President has selected Sheffield. So informed by Secretary of War 9/28. W. C."'"

The CHAIRMAN. Have you any opinion about the cyanamid process yourself?

Doctor PARSONS. I have been through a number of plants; all there are in this country and several in Europe. I made a very careful study of the process and its operation.

The CHAIRMAN. Do you think that it is likely to be superseded by new inventions or new processes?

Doctor PARSONS. I think it is practically already superseded by the Haber process and its modifications, and on that I can give you some very definite data. The cyanamid plant in Canada is practically shut down. It is producing no cyanamid, or very little cyanamid, for fertilizer. The cyanamid plants in Italy are closed. The cyanamid plants in France are closed. The cyanamid plants in Dalmatia and Silesia are closed. The cyanamid plants in Norway and Sweden are closed. The large cyanamid plant at Odda, Norway, which I had the pleasure of visiting in 1916, and which is fully equal to the Muscle Shoals plant in quality and one of the best constructed plants I ever investigated. It is not quite one-half the size of the Muscle Shoals plant, is now closed, and has been sold at auction within the last month for $10,000, or rather 50,000 kronen.

The CHAIRMAN. How much did it cost?

Doctor PARSONS. I do not know, but a very large sum, several million dollars. It was a plant for producing approximately one-half of the plant capacity at Muscle Shoals; say, from 80,000 to 100,000 tons of cyanamid a year, or something less than 20,000 tons of nitrogen.

The CHAIRMAN. Doctor Parsons, it is now about half past 12, and at this time the committee usually takes a recess and meets again at 2 o'clock. Could you kindly be here at 2 o'clock?

Doctor PARSONS. Certainly.

(The committee thereupon took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee met, pursuant to the recess, at 2 o'clock p. m., Hon. John C. McKenzie (acting chairman) presiding.

STATEMENT OF DR. CHARLES L. PARSONS—Resumed.

Mr. MCKENZIE. I think you had not concluded your statement, Doctor Parsons, when we adjourned, and you may proceed.

Doctor PARSONS. When the hearing adjourned I was replying to a question of the chairman with reference to the present condition of the cyanamid process. I had just stated that the process which, in all the other hearings I had stated was in a condition of obsolescence, has practically become already obsolescent;

that the plants in France are closed down; the plants in Italy are closed down, one of them fully (there are two in Italy), and one of them is possibly working on very short time making some products, but not cyanamid for fertilizer. The plants in Sweden are closed down and the plants in Norway are closed down. The plant across the border in Canada is closed down except for short-time operations for a few products which they make. They have no expectations of going ahead to any extent, immediately, so far as I am informed; in fact, I am informed to the contrary.

This plant was making ammonium sulphate by sending its cyanamid to Warners, N. J., and they closed down the ammonium sulphate plant in July, 1917, because they could not operate it at a profit. At that time, ammonium sulphate was selling for over $100 per ton. Of course, their costs were higher then than they are now, but they can not operate it to-day and they have no expectation of operating that plant again.

Mr. MILLER. Pardon; what plant is that?

Doctor PARSONS. That is the ammonium sulphate plant of the American Cyanamid Co. at Warners, N. J.

Mr. MCKENZIE. What do you mean, Doctor Parsons, when you say they can not operate, that they can not operate successfully against the competition coming from foreign countries?

Doctor PARSONS. They can not operate against the competition that is coming from this country, and they certainly can not operate against the competion which may come from foreign countries, because ammonium sulphate is selling in Germany to-day, on our exchange, for approximately one-half the price it is selling in the market here.

Mr. MCKENZIE. What is the competition in our own country at this time that they have to meet?

Doctor PARSONS. The competition in this country at the present time is ammonium sulphate from the coke ovens by-product. They were not able to sell their product. There has been a very great decrease in the price of nitrogenous fertilizers this last year, as I think has already been pointed out to this committee. The approximate price to-day of ammonium sulphate is around $50 a ton. It has sold in very large quantities this last year for $40 a ton, and I understand that there was one large sale at $39 a ton.

Mr. MCKENZIE. The product received from the coke oven is a by-product, in a sense, is it not?

Doctor PARSONS. Yes; but there has been more made than the country would take, and we have exported ammonium sulphate in quantity this last year. At the same time, I do not want you to get any false idea as to my stand with reference to that. I do not believe that that condition will last long, for I believe that this country is going to take and use all of the fixed nitrogen we can hope to make, and that it should be taken and so used by the farmers in order to produce crops more cheaply than they can do it by labor and by using more land. I am thoroughly in accord with concentrated fertilization and large use of nitrogenous fertilizers.

Mr. MCKENZIE. There is not any patent on the process coming from the coke oven, is there?

Doctor PARSONS. No. There is no patent, either, on the Haber process at the present time that keeps us from using this process, which is used in Germany and which will make ammonia a great deal cheaper than any other process for the fixation of nitrogen from the air.

Mr. MCKENZIE. Right in this connection, Doctor Parsons, I think it might be well for you to say if you have any opinion as to whether or not, notwithstanding the fact that under the cyanamid process it is impossible to manufacture and compete—whether there is any possible chance of a development in this country that will reduce the price of this very essential element that enters into fertilizers.

Doctor PARSONS. May I come to that in a moment and complete what I have to say about the cyanamid process, so we will clear that up?

Mr. MCKENZIE. Yes; you may answer that in your own way.

Doctor PARSONS. That plant at Warners, N. J.——

Mr. PARKER (interposing). What is the name of that place?

Doctor PARSONS. Warners. That plant was also making ammonium phosphate, a very concentrated form of fertilizer, which it is very desirable we should have in this country, but they were also obliged to close that plant down six months ago because they could not sell the product at a profit.

To give you a direct incident which has just been consummated bearing on this matter: The large cyanamid plant at Odda, in Norway, which I visited in 1916 and which was at that time, I think, the best cyanamid plant in the world and has only been exceeded since by the one at Muscle Shoals, has been closed down for some little time. On the 11th of February it was sold at auction, and it sold for 50,000 kroner, and it might be well for me to put in the record here an extract from the Chemical Age, of February 18, 1922, giving that data. Fifty thousand kroner at normal exchange is some $16,000, but at present exchange it is only approximately $10,000 in our money. That plant was an immense plant. They are making this change with the expectation of adopting there a modification of the Haber process. As it is impossible to convert a cyanamid plant into a Haber plant or to practically use anything of importance which the cyanamid plant has in the Haber operation they really got, when they purchased this plant at auction, what might be considered a low price for the land that the plant stood on; probably a lower price than they otherwise would have gotten, because they have to clean off most of the structures on it before they can go ahead and use the new and modern process.

I had last night a conference with three Norwegians, engineers who are in the city on other matters, whom I had met in my European trips, and they tell me that it is their belief that the cyanamid plants in Germany also are closing down or are closed down. Now, I have no definite information on that. My own information is that the cyanamid plants in Germany, or at least some of them, are still running, and may run for a while yet for the reason that in Germany they have rather special conditions, not only in labor but in some of the raw materials, which the cyanamid plants use, for example, coal. The Haber plant, as used in Germany, requires about 6 tons to 6½ tons of coal per ton of nitrogen produced. The cyanamid plants require less coal for process purposes, if you leave power out of consideration. They take only from 3 to 3½ tons of coal, and coal is a very great factor in Germany at the present time. Accordingly, those plants will probably survive longer than any other cyanamid plants. They also tell me that the immense nitrogen plant at Rjukan, Norway, run by the Norsk Hydro Co., this last year purchased from Germany direct, considerable quantities of Haber-made ammonia in tank cars delivered at Rjukan for one-half the price per ton of nitrogen for which they themselves were selling it for in the form of calcium nitrate. They had to make ammonium nitrate, and it was far cheaper to get their ammonia from Germany than to get it from the cyanamid plant at Odda. That was one of the reasons that the cyanamid plant closed down, as their market was taken away from them by this German competition. In Germany ammonium sulphate is, of course, selling at a very low price. That also has been published within a week as something like $25 or $30 a ton for the ammonium sulphate, but, of course, everything in Germany is very low to-day.

(The article referred to follows:)

"ALBY UNITED CARBIDE UNDERTAKING—TYSSEFALDENE POWER CO. BUYS ODDA FACTORIES.

"In accordance with the arrangements disclosed at the extraordinary general meeting of the company in December last (see The Chemical Age, Vol. V, p. 838), the foreclosure sale of the Odda factories was held on February 11, when the Tyssefaldene Power Co. purchased the factories for 50,000 kroner. It will be remembered that, according to a statement made in December last, the purchasers were owed a large sum of money by the Alby Co., and that the Tyssefaldene Co., together with the English syndicate, intended to restart the factories within six months for the production of ammonium sulphate. According to an agreement reached at the December meeting of the Alby Co., an adjourned extraordinary general meeting will be held not later than February 28."

Doctor PARSONS. One other thing I would like to call your attention to is a statement made to me by Mr. Barton in the summer of 1920, which I quoted in the record because it is somewhat of a prophecy which I fully believed in at that time. Mr. Barton was the promoter in England of the Norwegian and Swedish plants, and occupied in North Europe very much the same position to the cyanamid companies that Mr. Washburn occupied in America. Mr. Barton stated to me, "Doctor Parsons, as sure as we sit here, the cyanamid process is a thing of the past, being sure to be replaced by the synthetic ammonia process." That was two years ago, and has been in accord with all the testimony I have ever given before Congress.

Now, to come to your question as to what should be done. I think there is no question whatever that America should, can, and will use the synthetic ammonia process for the fixation of nitrogen no matter what this committee decides with reference to Muscle Shoals, because it is an absolute economic certainty that a process which is developing like that process is developing is going to be utilized also in this country.

I want to refer to a statement which was made before this committee and which I saw in the press—I have not heard all the testimony—to which I want to take very strong exception, and that is with reference to certain statements that have been made concerning the explosion at Oppau as affecting the Haber process with reference to plant No. 1 at Muscle Shoals and as to its being a failure and to certain of the operations at Syracuse which are absolutely incorrect in the record.

For example, the statement was made that the plant was located at Syracuse to be near the coke ovens. This is wrong. It has no connection with coke ovens. The statement says that at Syracuse by-product hydrogen is available. That is not true. They do not use one pound of by-product hydrogen, and never did.

Mr. STOLL. Who made that statement?

Doctor PARSON. Mr. Worthington; that is, the paper says he did. I do not know. They make their hydrogen at Syracuse by exactly the same process, or essentially the same process, that they make it in Germany—from coal by the action of carbon on water and steam, and that is why the big steam plant was put in at plant No. 1. Plant No. 1 at Muscle Shoals was put in as an experimental plant on a small scale in order to get the necessary information to increase it in size. It was started on the basis of 22,000 tons of ammonium nitrate per year. However, only one unit of approximately one-third or a little more of that plant was constructed.

It was just one-fifth the size of the other plant contemplated. However, only one of the units was put in in order to get information to build the rest of the plant. They only had a very short time after that unit was completed to get data on operations. They found difficulties exactly as the Germans found when they first ran their Haber plants on the other side in the early history of that process. There were great difficulties, owing to the high pressures used and the difficulty of preparing the catalyst on a large scale. They could prepare it easily in the laboratory on a small scale. Then the armistice came and the plant was closed down.

The Ordnance Department tried to make arrangements with the General Chemical Co. to go ahead and operate plant No. 1, but they could not come to an agreement, largely because the General Chemical Co. wanted to get away from any question of government relationship. Their engineers had claimed that it was the Government engineers that kept it from running right in the first place, and the Government engineers claimed that it was their engineers that kept it from running right in the first place, and there was no complete agreement between them. Accordingly the General Chemical Co. changed its plans and started to build a new plant by essentially the same process, changing a number of the mechanical details for which they had obtained the data in the operation at Muscle Shoals, changing their catalyst and some other details of the plant. Then they built a plant almost immediately at Syracuse, N. Y., to run by the General Chemical Co.'s process, running under 100 atmospheres, as at Muscle Shoals. That plant was completed in very short order. That plant operated perfectly from the start. So far as I know it has not closed down a day since it started. It was built on a 10-ton basis, and it has been producing over 12 tons a day for several months.

So that instead of plant No. 1 being a failure, in my opinion, plant No. 1 has thoroughly justified itself. I have not the slightest doubt that the fixed nitrogen which is to be made in the future in America is going to be made by a synthetic ammonia process, whether it is at Muscle Shoals or wherever it may be, simply for the reason that there is no other process in the world that for a minute can compete with it commercially.

In Germany the Haber process is operating at full capacity, turning out 300,000 tons of nitrogen per year, about 90,000 tons of which is at Oppau, and the other 210,000 at Merseburg.

At Oppau there was a terrible explosion, probably the largest that ever occurred, a few months ago. That explosion had absolutely nothing to do with the Haber process. It was an explosion of ammonium nitrate mixed with ammonium sulphate. They had 4,500 tons of that material stored in one building. You have stored at Muscle Shoals to-day 3,400,000 pounds, or something over 1,500 tons of ammonium nitrate, which would explode itself if it was subjected to the same conditions. That amount of ammonium nitrate which is in storage at Muscle Shoals has been on the market, offered for sale within three months, and the highest bid they could get, so far as I have been able to find out, was about 3¾ cents a pound, and the average was somewhere around 3¼ cents, which is a very low price.

The Government declined the bids on that basis and none of its was sold, although it is the most concentrated form of nitrogen you have in America at the present time, and ammonium nitrate if put out by itself by hand on the farm would be a most excellent fertilizer. It will not mix readily in mixed fertilizer, but the South uses large quantities of sodium nitrate every year in the form of sodium nitrate put out as top dressing, and the ammonium nitrate would be very valuable to the farmers if it was sold to them, and they had large bids from the farmers in the South, some of which I have personal knowledge of.

Now, as to that explosion at Oppau, I want to go very strongly on record as saying it had nothing whatever to do with the process by which the ammonium nitrate was produced. Nobody knows why it took place, but these engineers with whom I was talking last night, and who bring me the latest information, tell me that there is talk around among the engineers on the other side that it was due to the fact that the workmen substituted dynamite for some of the safety powders which had been used before in breaking up the mass. If you take 4,500 tons or any large amount of ammonium nitrate with ammonium sulphate mixed with it and pile it up in large piles or in large storehouses, as it was piled there, it cakes together in a mass. They had been blasting it out, as they needed to break it up. Now, the rumor is as stated, and I wish you to understand that this is rumor only—I do not think anybody knows—I do not believe the Germans themselves know why that explosion took place.

They know that they were blasting, but the rumor is that the workmen were on piecework and the dynamite would break up the mass very much more rapidly than these other explosives; that they substituted dynamite to break up the mass instead of the explosives which had been used theretofore, and that the mass itself then went off. Now, we know that ammonium nitrate will explode, because we had a big ammonium nitrate explosion in this country at Morgan, N. J., in the latter days of the war. Nobody supposed before that explosion that you could ever get an explosion out of ammonium nitrate; but they got it there, and they got it in Germany, and if you have the right conditions it is liable to go off anywhere; but I still think there is no danger in making ammonium nitrate if it is properly and judiciously handled; but if you have 4,500 tons of it around I would advise you not to try to break it up with dynamite or with any other explosives.

The Haber plant over there is again working. This plant at Oppau, which was supposed to be wiped off the face of the earth, is now, within a few months after this explosion, producing nitrogen again to capacity, and Germany is turning out something like 2,000,000 tons of ammonium sulphate, or its equivalent, made from air nitrogen, and using most of it in Germany for concentrated fertilization. So that I think there is no question whatsoever as to the future of the Haber process, and I believe, and believe very strongly, that the one possibility of making fertilizer with any degree of cheapness is through the development of plant No. 1 at Muscle Shoals, and that you can never hope to do anything with plant No. 2, and that anybody that runs it will lose money very rapidly.

I would like to call your attention, because a few matters have come to my notice, to Exhibit B before this committee bearing upon the same argument. Some one of this committee asked Major Burns, of the Ordnance Department, to submit an estimate as to the commercial operations from the standpoint of profit and loss from plant No. 2 for a period of six years. He has done that in your Exhibit B. Now, Exhibit B, as it stands, shows a loss for the six years of operation of $2,919,650. To get that loss, however, in the first place, he puts his ammonium sulphate at $65 a ton. Ammonium sulphate may go up in price. I am not predicting markets, but it is my opinion that ammonium sulphate will never sell for any long period of time much higher than it has this year, on account of the great developments of the processes which are taking place. The market price at the present time is approximately $50 a ton, and as I have said, large quantities, thousands of tons, have sold this last year as low as $40 a ton. If

you put that price in at $50 per ton, which is the present market price, instead of $65, which Major Burns assumed as an average market price (not "cheap fertilizer," but more expensive fertilizer), you will get a loss on those same figures of $22,269,650 for operating plant No. 2 for six years. These figures come to you from your own Government experts, and are agreed to, not only by the Ordnance Department, but by the Nitrogen Fixation Laboratory. My own opinion is that the expense account in their estimate is too low, but unless you wish me to go into that, I think it is unnecessary to go further than to show the loss which has already been indicated. He has put his depreciation, for example, for six years at 5 per cent. My personal opinion is that those plants will be obsolescent—I think they are obsolescent now; but if you make them obsolescent through the six years it is much more than that. He has put his interest for six years at 5 per cent, and I do not believe that any industrial corporation of any size for the next six years is going to get their money at 5 per cent.

There is one other thing with reference to that plant which I think should be brought to your attention, which, so far as I know, has not been brought before you, and that is the fact that if the cyanamid plant at Muscle Shoals is operated, there will be approximately 460,000 tons of sludge per year that has to be disposed of. Now, 460,000 tons of sludge per year is equivalent to approximately 300,000 cubic yards. That has got to be disposed of and put somewhere. In the hearings which have gone before, they have assumed it would be run into the Tennessee River. It is my opinion that if it is run into the Tennessee River you will damage navigation far more than you will help it by any locks you may put in, not only on account of the fact that a good portion of this material itself will be deposited, but also, owing to the fact that it is an alkaline material, and it is well known that alkaline material causes clay in water to coagulate and settle. Wherever the waters of the Mississippi River or any other muddy river come in contact with electrolytes, like they do when they enter the Gulf of Mexico and touch salt water, their clay is deposited and deltas are formed. If you put this quantity of material into the river when it goes by the plant at Muscle Shoals, it is my opinion that it will not be six months before you are legislating against it, and the disposal of the material will be a very difficult matter on account of this large amount.

There is another matter of some importance, of a technical nature, which it seems to me should be corrected. I happened to be present at one or two of the early hearings, because I wanted to hear Mr. Swann's testimony, especially about phosphate, because I wanted to know what he had done in his plant, and I came up to listen. I had to wait through one or two hearings before he came on, and I heard some of the testimony at that time, and I have seen some of the printed testimony since then. I understand in one of the offers that is before you there is an agreement to run plant No. 2 to its capacity unless prevented by strikes, and lack of making profit, and some other points the exact detail of which you can get from your testimony.

The question was frequently asked as to what was meant in that offer by the equivalent of 110,000 tons of ammonium nitrate or, to put it in other units, of 40,000 tons of nitrogen, and the statement was made that the equivalent reasonably considered would be 2,000,000 tons of commercial fertilizer of 2–8–2. Now, if you can get anybody to agree to make 2,000,000 tons of fertilizer of 2–8–2 at a cheaper price than the present market, I think I should be in favor of any such offer, but I want to be sure that you have such an agreement. The point is that 2,000,000 tons of 2–8–2 fertilizer would contain 40,000 tons of nitrogen, which is the full capacity of plant No. 2 as it stands, which requires, we will say, 100,000 horsepower to produce. It means also 160,000 tons of P_2O_5, or phosphoric acid, and it means 40,000 tons of K_2O, or potash. Now, to produce that phosphoric acid by the electric-furnace method at Muscle Shoals would take very much more power than to produce the nitrogen, and to produce the potash from potash shales would also require its quota of power, so that taking it on the very lowest possible basis of power production—and I can go into the details if you wish—it would require approximately 100,000 horsepower for the 40,000 tons of nitrogen and possibly 160,000 to 170,000 horsepower for the production of the phosphoric acid and approximately 75,000 horsepower more for the production of the potash; and where are you going to get the power if this is going to be done as a power proposition? You simply will not have any power to run the automobile factory which plant No. 1 is to be converted into. Now, that is not an equivalent and could not be considered by anyone an equivalent, and would take at least three times the horsepower if it was carried out by the methods proposed.

The statement was made that the 2,000,000 tons of fertilizer would probably be made at a saving of 33⅓ per cent. Now, if you will take the present price of that amount of fertilizer and put all the "nitrate" which could be made in plant No. 2 into it for nothing, the saving would not be 33⅓ per cent of the fertilizer.

I think that I have nothing more to say, unless there are some questions.

Mr. McKENZIE. Doctor Parsons, do you have an organization in this country of chemists such as yourself?

Doctor PARSONS. Yes; there are several, the Electric Chemical Society, the Innstitute of Chemical Engineers, and the American Chemical Society.

Mr. McKENZIE. I presume all of those men give more or less attention to matters of this character?

Doctor PARSONS. Well, some of them specialize more in this line than others—some work on steel work and some on fertilizer work and some on nitrates, etc.

Mr. McKENZIE. In your statement to the committee have you been voicing the general sentiment or views of this organization or these various organizations, or are they principally your own views?

Doctor PARSONS. None of the organizations has taken any stand on the matter whatsoever. I am voicing my own views entirely, which I believe, however, 99 per cent of the chemists of the country would agree with if they went into the matter, but of that I am not prepared to speak.

Mr. McKENZIE. Do you know of any distinguished chemists that differ from you in this contention about the cyanamid process?

Doctor PARSONS. Not anyone who is not interested in the cyanamid process; no; not at the present time. They have disagreed with me in the past as to what the future of the cyanamid process would be.

Mr. McKENZIE. Now, I want to ask you this question, Mr. Parsons. I think you have made a pretty strong case here as to the apparent vanishing of the cyanamid process——

Doctor PARSONS (interposing). I want to call your attention to the statement of Doctor Tolman, who is one of our very highest class chemists. He states in his testimony that they estimate now a cost of about $65 per ton; that that is the lowest estimate they can make, and he is at the head of your nitrogen fixation laboratory. If you can not make ammonium sulphate at less than $65 a ton, you can not hope to sell it at the present time, and certainly not at a profit; and while Doctor Tolman and I would probably disagree as to what the cost of ammonium sulphate by the cyanamid process would be, and he would place his figures considerably lower than I would place them, still he has stated to you after careful study that he thinks they could break about even at $65 per ton for ammonium sulphate with power at three-quarters of a mill per kilowatt hour and with capital charges of not over five to ten million dollars.

Mr. McKENZIE. Are you familiar with the proposed contract submitted by Mr. Ford?

Doctor PARSONS. I have read it. I have not studied it with very great care.

Mr. McKENZIE. Is it your contention that under that contract Mr. Ford would be compelled to proceed with the manufacture of nitrates under the cyanamid process, or could he utilize any new development in the manufacture?

Doctor PARSONS. You have got to go to the testimony, I think, to find out about that.

Mr. McKENZIE. I am speaking of the contract.

Doctor PARSONS. He agrees to two things, as I understand it, and one of them is to keep plant No. 2 in a stand-by condition, available for the use of the public defense at any time; and, second, to operate it to capacity unless prevented by strikes or other causes. I understand he has stated to Secretary Weeks that one of the causes would be inability to run it at a profit, and that Mr. Mayo gave the same testimony, and all other representatives of his. I am sorry Mr. Ford has not been here before you to state definitely what he means, but if he means that if he can not run that plant at a profit he is not going to run it I do not think he will ever run it, and I think that stands out practically in every one of the reports that have come to you officially.

For example, there is a big "If" in every one of the propositions. Secretary Weeks, for example, shows clearly in his testimony that he does not consider that this offer carries any real assurance or guaranty that any fertilizer or nitrate will be made.

General Williams says: "If the Ford offer means, in the case of the No. 2 plant, that such plant will be operated at its approximate capacity for the fixation of nitrogen," etc.

General Beach says: "Indirect benefits accruing to the United States are (*b*) the production in the interest of the public welfare of large amounts of fertilizer at a cost not exceeding the reasonable cost of production, providing that the production of nitrates adapted to fertilizing purposes is found to be practicable."

The Secretary of Agriculture in his statement to you was no less noncommittal. The authorized statement given out by Doctor Tolman favors the Ford offer only "if its terms are sufficiently definite and binding to make sure that the plant will be operated continuously for the manufacture of fertilizer."

Mr. Ford, according to Secretary Weeks, states definitely that plant No. 2 will not be operated unless it can be operated at a profit, and Mr. Mayo definitely confirms this statement in his testimony.

Mr. JAMES. This morning you were talking about several talks Mr. Washburn had with the committee of which you were a member. You talked about his proposition, and then you said afterwards that they got better terms. By "they" you meant Mr. Washburn and his friends, did you not?

Doctor PARSONS. No; I meant the Ordnance Department. They got very much better terms.

Mr. JAMES. The Ordnance Department got better terms at last than they did at first?

Doctor PARSONS. Yes. I had nothing to do with those negotiations, and I know nothing about them except as they are in the record. My connection with the case closed that evening, and I was not called in again on plant No. 2.

Mr. JAMES. You mean at the first meeting?

Doctor PARSONS. Yes, sir.

Mr. JAMES. There was a gentleman there that night from New York called Mr. MacRoberts?

Doctor PARSONS. No; I think not.

Mr. JAMES. I think you will find at the first meeting—that was the night Mr. Baruch was there, was it not?

Doctor PARSONS. No. I am not sure whether Mr. Baruch was there or not. I do not remember that he was. He may have been. I would have to refer to the previous testimony to find out definitely. I remember the officers, including Major Crabs, and I was under the impression that I was the only civilian present.

Mr. JAMES. At one meeting when Mr. Baruch was present, there was a Mr. McRoberts, of the National City Bank of New York, present. He was then a civilian but was afterwards a colonel in the Army, and he was the man who was responsible for all these contracts by which we are tied up. At that meeting I supposed that the men who went there were men who knew something about this nitrates proposition.

Doctor PARSONS. I do not think Mr. McRoberts was present at that meeting, but you can easily find out from the hearings before Mr. Graham's committee, because the full personnel is given there.

Mr. JAMES. Do you know anything about Mr. McRoberts?

Doctor PARSONS. I do not. I have no knowledge of ever having seen him.

Mr. JAMES. You never heard of his being an expert on the nitrate proposition?

Doctor PARSONS. No. He was, I think, in charge of contractual relations in the Ordnance Department, because I know when we came to make the contracts for the cyanide plant, which I had charge of and which I built at Saltville, the contracts had to go over to Mr. McRoberts, but I dealt with a Major or Colonel Black, I think it was, in the matter, and never saw Mr. McRoberts myself.

Mr. JAMES. Major Joyes testified at the hearings of the Graham committee that he had talked with Mr. McRoberts before he entered the Army about this matter, and I was just wondering whether he knew anything at all about the nitrate business.

Doctor PARSONS. I have absolutely no knowledge of it.

Mr. JAMES. You were not consulted about nitrate plant No. 2 at all?

Doctor PARSONS. No; except at that first meeting, at which I put my opinions in writing the next morning, because I wanted to be on record. I saw very clearly that night that the rest of them did not agree with me and I did not want to be in a position later where I would not have a full memorandum of the occasion.

Mr. JAMES. Was there any talk that night of plant No. 2 being used for the manufacture of fertilizer after the war was over?

Doctor PARSONS. Not that I remember. It was built almost wholly—it was built wholly, as I understand it, as a war emergency. It was not expected then that it could compete with other processes on the fertilizer basis.

Mr. MILLER. You are very much against the cyanamid process, Doctor?

Doctor PARSONS. No; I am not against it.

Mr. MILLER. As compared with the Haber process?

Doctor PARSONS. I think there is absolutely no question but what the Haber process is the process of the future. I have not anything against the cyanamid process except, in my opinion, it is practically obsolescent.

Mr. MILLER. The plant at Syracuse of which you speak is on the Haber process?

Doctor PARSONS. A modification of the Haber process.

Mr. MILLER. Built by the same company, I believe, the General Chemical Co.?

Doctor PARSONS. Built by the same company that was in contractual relations with the Government for plant No. 1; yes.

Mr. MILLER. Plant No. 1 is a failure, you say?

Doctor PARSONS. I do not say so: no, sir; I do not consider it a failure at all. I consider it the first trial of a process which has become unusually successful and that they gained the information from it which they hoped to gain from it when they started it.

Mr. MILLER. It was built as a trial plant, then?

Doctor PARSONS. Yes, sir.

Mr. MILLER. It was a rather dangerous time—during the war—to start in with a trial plant.

Doctor PARSONS. It was not built for war emergencies at all. It was built under the national defense act, with the idea of getting a supply both for fertilizers and for the use of the country in time of war.

Mr. MILLER. Doctor, there was certainly an impelling force in Congress to enact this legislation when the world was ablaze with war and a great many people of that day and hour believed that ultimately America would get into it. It was certainly felt that that was an impelling reason with the prospects we had before us. That is the way I view it.

Doctor PARSONS. That plant was built after very careful consideration by the best talent they could get in America to meet the purposes of the national defense act. We were not then in the war. I am wrong; that was determined upon in May of 1917. In the spring of 1917 we were in the war, but there was not any expectation that we would be cut off from Chilean saltpeter or that there would be any such demand for that material. It was in the latter part of that year that the urgency came on, and then they built plant No. 2 as a war emergency, because they knew they had all the data to make it a success from the start. The other plant was built as a semicommercial trial plant and is a successful commercial plant in Syracuse to-day.

Mr. MILLER. You mean the plant in Syracuse was built as a semicommercial trial plant, or the one at Muscle Shoals?

Doctor PARSONS. The one at Muscle Shoals, which is only about one-third completed; that is, to its full capacity.

Mr. MILLER. It strikes me as rather peculiar and as a rather bad proposition, when we were at war or on the threshold of a war, for anybody to advise the Government of a process for the fixation of nitrogen that they did not know would be a success.

Doctor PARSONS. We knew at that time that that process, or basically the same process, was a very great success in Germany, and we thought that it would work more successfully on the start off than it did; but it was built on a small scale to be sure of that, and with the idea of getting the data and then rapidly increasing it.

Mr. MILLER. Were there any plants then in existence and running to capacity in Norway and Sweden that were using the Haber process?

Doctor PARSONS. No, sir; there was none, except in Germany, and we could not get into Germany and get the data. We had to simply take the data which the General Chemical Co. had.

Mr. MILLER. Now, the cyanamid process, you say, is an obsolescent process, but it will make ammonium nitrate?

Dr. PARSONS. Yes, sir; and that is why it was used.

Mr. MILLER. As between a surety and a failure, or as between a process that all agree will manufacture what we are after, although it costs more, as compared with a process that we do not know how to follow out, it seems to me

that in time of war the better judgment is to follow the system that has been proved, and I suppose that was the policy that the Government followed.

Doctor PARSONS. That is exactly the policy upon which plant No. 2 was based, and to which I think no one has taken exception. It was a process by which you can get ammonium nitrate, no matter what the cost might be.

Mr. MILLER. I think that was a good policy. Now, as to all these cyanamid factories in Germany which you say have closed down. Were they built as war emergencies, and was the one in Sweden of which you spoke built for the immediate sale of its product to Germany?

Doctor PARSONS. The ones in Norway and Sweden were not built, as I understand it, as a war emergency, because they were built before the war. The cyanamid process predated the Haber process, and it was the process which people expected to make a commercial profit from in those days.

Mr. MILLER. But its output was taken almost exclusively by Germany, was it not?

Doctor PARSONS. No; its output was taken almost exclusively by the Allies.

Mr. MILLER. By England?

Doctor PARSONS. By England and France. Most of it went to France. Its output went in the form of ammonia and that was sold to the arc plant at Rjukan that had nitric acid. They converted it into ammonium nitrate and produced some 240,000 tons of ammonium nitrate per year, the major portion of which went to France after the war broke out.

Mr. MILLER. It was completed just before the war was it not?

Doctor PARSONS. They were all greatly enlarged during the war, because there was an immense market.

Mr. MILLER. Then we might say that the inducing cause for the construction of those immense plants was the great demand for it and the good price which prevailed during the war?

Doctor PARSONS. That had a very great effect. There is no question but what the enlargement was due to that almost wholly.

Mr. MILLER. You spoke of this large plant in Norway, I believe, having been sold for an unreasonably small sum of money. Do you know the circumstances of that sale? Was it a case of bankruptcy or forced sale, or was it just a deliberate change in processes?

Doctor PARSONS. I understand it was a case of practical bankruptcy by the cyanamid company, but that the people who control the cyanamid company are going to go over to a modification of the Haber process, and that they have practically got to clean away everything there. That is an important point that you are bringing out, Mr. Miller. If they change plant No. 2, it will have to be practically wiped off of the ground before it can be used for any other method for fixing nitrogen. You could not any more make nitrogen by the Haber process in cyanamid plant No. 2, at Muscle Shoals, than you could make shoe strings in a blacksmith shop. You would have to clean out the blacksmith shop and start fresh.

Mr. MILLER. It is fundamentally an entirely different method of procedure?

Doctor PARSONS. Fundamentally an entirely different method of procedure.

Mr. MILLER. You are not connected in any way with any institution manufacturing by the Haber process in any wise?

Doctor PARSONS. I am not.

Mr. MILLER. Your statement is just a clean, scientific comparison, or a comparison from a scientific standpoint of the two processes, unprejudiced.

Doctor PARSONS. I am giving you absolutely unprejudiced testimony, as I understand it, as I have always done before every committee of Congress before which I have ever appeared.

Mr. MILLER. Then, according to your ideas, Mr. Ford's proposition can not be other than a losing business venture so far as the manufacture of ammonium nitrate as an ingredient of fertilizer at plant No. 2 is concerned?

Doctor PARSONS. Anyone that operates plant No. 2 will lose money from the day he starts it, if he is going to try to fix nitrogen therein.

Mr. MILLER. There is no exception in Mr. Ford's offer that he will not run the plant unless he can run it at a profit. He agrees absolutely, and at all events, to run that plant. There has been some quibbling around here, but the contract itself says that he will run the plant to its capacity. True, he does not bind himself to the production of ammonium nitrate exclusively, but to other fertilizer compounds, unless prevented by strikes, fires, or unforeseen accidents. The element of a commercial success does not figure in it.

Doctor PARSONS. All I know is the testimony I have heard, and Secretary Weeks's opinion on the matter.

Mr. MILLER. Yes; there has been a lot of testifying around here. I believe that is all.

Doctor PARSONS. My only contention is that I hope that if he is to run plant No. 2 that you will get some definite guaranty that that is what he means, and that he will run it, either Mr. Ford or anybody else.

Mr. PARKER. The words of the contract are, "The company agrees to operate, etc., at the approximate present annual capacity, etc., except as it may be prevented by strikes, accidents, fires, or other causes beyond its control." I have had some difficulty in expounding the words, "other causes beyond its control," and whether that meant in case it was impossible to make it at a decent price. Have you ever known that phrase used in a contract before?

Doctor PARSONS. I have not, no; but then I would not normally be expected to know, because I know very little about law and am taking no stand here as a lawyer.

Mr. PARKER. The plant No. 2 cyanamid process is a rather complicated sort of manufacture, and goes through several steps. What is the first thing it makes?

Doctor PARSONS. Calcium carbide.

Mr. PARKER. Is that a thing for which there is a market?

Doctor PARSONS. Yes; quite a lot of it is sold in the United States. There are other plants in the United States larger and more extensive than the plant at Muscle Shoals. It is manufactured for the production of acetylene.

Mr. PARKER. Is the market growing or not?

Doctor PARSONS. I think it is, but I can not speak with authority.

Mr. PARKER. You can not say, then, if it had water power, whether there would be a profitable market for the calcium carbide without going any further?

Doctor PARSONS. I think there would be a market for calcium carbide; yes.

Mr. PARKER. And that they could make it as cheap as anybody?

Doctor PARSONS. I do not see any reason why they could not.

Mr. PARKER. The next thing they make from the calcium carbide is what?

Doctor PARSONS. Cyanamid.

Mr. PARKER. Cyanamid—what is that?

Doctor PARSONS. The calcium carbide is ground fine and is put in a special form of furnace, is heated locally, and pure nitrogen from the air is pumped into the mass.

Mr. PARKER. Then pure nitrogen has to be made.

Doctor PARSONS. Pure nitrogen has to be made from the air, yes. That is done by liquefying the air and allowing the oxygen to boil out.

Mr. PARKER. Is that an expensive process or not?

Doctor PARSONS. That is not. It is a very cheap process.

Mr. PARKER. Getting the nitrogen is a cheap process?

Doctor PARSONS. Yes.

Mr. PARKER. Is getting the cyanamid a cheap process?

Doctor PARSONS. From the carbide.

Mr. PARKER. No; the cyanamid itself.

Doctor PARSONS. No; it is not a cheap process. You have to make the carbide first. Then the carbide has to be ground. There are some dangers in that grinding. It then has to be put in these special furnaces, locally heated, the nitrogen pumped in, and the hot carbide absorbs the nitrogen to form cyanamid.

Mr. PARKER. Is there a market for cyanamid?

Doctor PARSONS. There is not, to the extent of that plant. There is a very limited market for cyanamid, and at the present time there is practically no market for cyanamid at any price it can be made.

Mr. PARKER. So that the profitable part of this manufacture stops, so far as that is concerned, with the manufacture of the calcium carbide.

Doctor PARSONS. That is correct.

Mr. PARKER. After you have made the cyanamid, what is next?

Doctor PARSONS. That cyanamid cakes again by the process and has to be reground in special constructed mills. Being reground, it is then put in large autoclaves.

Mr. PARKER. How do you spell that?

Doctor PARSONS. An autoclave is essentially a pressure boiler, but usually higher pressure than an ordinary pressure boiler would be. They run in caustic soda or sodium carbonate and then run in steam under high pressure. Under those conditions, the nitrogen in the cyanamid is converted into ammonia gas. That ammonia gas is later partly oxidized to nitric acid and then another

portion of the ammonia gas is absorbed in nitric acid to make ammonium nitrate. Now, ammonium nitrate is not at the present time salable for fertilizer. They would have to put in a sulphuric acid plant.

Mr. PARKER. I understand that. They are not at present salable without changing them into ammonium sulphate.

Doctor PARSONS. Correct.

Mr. PARKER. Are they made cheaply? Is there any market for them at all for any purpose?

Doctor PARSONS. For what?

Mr. PARKER. For the ammonia gas.

Doctor PARSONS. Only for fertilizer purposes and for refrigeration.

Mr. PARKER. There is a market for it for refrigeration?

Doctor PARSONS. But it first has to be liquefied.

Mr. PARKER. And is this product manufactured there cheap enough to sell on the market for that purpose?

Doctor PARSONS. No, sir; because it has to go into competition with other ammonia which is on the market much more cheaply than it can be produced at that plant.

Mr. PARKER. Why is the other much cheaper?

Doctor PARSONS. Simply because at the present time the supply is in excess of the demand, I presume.

Mr. PARKER. When the demand is reasonable for this product, can they make it as cheap as it can be made by other processes?

Doctor PARSONS. They can not. They can make it much cheaper by the Haber process than they can by the cyanamid process, no matter what the demand may be.

Mr. PARKER. You had something to do with putting in plant No. 1, did you not?

Doctor PARSONS. I did not.

Mr. PARKER. I misunderstood you.

Doctor PARSONS. I had something to do with the board that advised its being put in. It was put in by Government engineers.

Mr. PARKER. You afterwards did work with the Syracuse company?

Doctor PARSONS. Afterwards I was consulting chemist with the Syracuse company until last August, when their plant began operating.

Mr. PARKER. Do you know why the process failed at plant No. 1?

Doctor PARSONS. I do not consider that the process failed at No. 1, but why it did not operate successfully in the first place was due to a number of causes. The first and most important was that the catalyst which at that time they expected to use could not be made on a large scale successfully, as they were able to make it on a small scale in the laboratory.

Mr. PARKER. Can they do it now?

Doctor PARSONS. They do it now, but they use another catalyst.

Mr. PARKER. Is that a secret catalyst?

Doctor PARSONS. It is.

Mr. MCKENZIE. Pardon me, Mr. Parker, will you permit Doctor Parsons to explain that term?

Mr. PARKER. Catalyst?

Mr. MCKENZIE. Yes.

Doctor PARSONS. A catalyst is a substance which by its presence enables a chemical reaction to take place rapidly, when the reaction would not take place unless the catalyst was there. It has been explained in the hearings before, and possibly to you; and this comparison may serve, we do not know how a marriage could take place without a minister.

Mr. MCKENZIE. Oh, yes, we do.

Doctor PARSONS. Or some function of law.

Mr. PARKER. I went to Gretna Green, and at Gretna Green they were making sulphuric acid. They burnt the sulphur at the bottom of a big tower. They brought a blast of hot air down a large tower, and they would have gotten nothing more than this yellow gas that comes from burning sulphur except for the presence of a platinum screen or mesh across this thing, and for some unknown reason the screen of platinum made the yellow smoke turn into sulphuric acid which was almost without water and absolutely pure. Am I right about that?

Doctor PARSONS. You are right except it is not a yellow smoke. Sulphur dioxide is absolutely colorless.

Mr. PARKER. Well, we generally think of it so. It is the kind of smoke that comes from the lighting of a sulphur match.

Doctor PARSONS. One of the most important and one of the largest catalyst processes was the process for the manufacture of strong sulphuric acid. As you say, the gas which comes from burning sulphur, which you get when you strike a sulphur match, and air are passed over platinum on asbestos, and if the platinum is there they combine to form sulphuric acid, and if the platinum is not there, they do not. Now, that is what a catalyst is.

Mr. PARKER. They make such a pure sulphuric acid that they could carry around in an iron receptacle.

Doctor PARSONS. Yes; and another thing, if there happens to be any arsenic in that sulphuric acid, the platinum will not work. It poisons the platinum the same as it would poison a human being.

Mr. PARKER. The Agricultural Department people said they had a first rate catalyst now.

Doctor PARSONS. Yes; they have an excellent catalyst, the best in the world.

Mr. PARKER. But you said the catalyst was a secret.

Doctor PARSONS. The catalyst which the General Chemical Co. uses is a secret.

Mr. PARKER. And is the one that the Agricultural people use just as good?

Doctor PARSONS. In my opinion it is better.

Mr. PARKER. Then there is no difficulty about the catalyst in carrying on this manufacture by the Haber process.

Doctor PARSONS. That is quite correct.

Mr. PARKER. Now, what other difficulties besides the catalyst which they had there were there about that process. I heard something about leakages, etc.

Doctor PARSONS. That was the second great difficulty. Of course, it was one of the first experiences that the mechanical engineers of this country had had with pressures of 1,500 pounds per square inch in large units, and there were certain leakages and certain bulges in the apparatus which they had difficulty to fix. They have overcome that absolutely at the present time, and since those early days also the Chemical Foundation has taken over the German patents.

Mr. PARKER. Who overcame those leakages? Do you mean that the Ordnance people down at Muscle Shoals have overcome those leakages?

Doctor PARSONS. A number of those leakages were overcome and were being overcome before the plant closed; but they have been more especially overcome in the redesigned plant at Syracuse.

Mr. PARKER. Would you then advise, and would it be necessary, to redesign plant No. 1 to make it worthy?

Doctor PARSONS. Yes, sir; I think it would.

Mr. PARKER. How much would that cost, taking the unit they have there, that costs how many million dollars?

Doctor PARSONS. I do not think I could give you that cost without referring to the record.

Mr. PARKER. Would it cost one-third more than it has already cost or one-fourth or one-fifth?

Doctor PARSONS. I think that plant at the present time could be put into operating form for $1,500,000 to $2,000,000, with about 30 tons a day capacity.

Mr. PARKER. Do you know what was the original cost of it?

Doctor PARSONS. There were a great many other things in the cost. There was an ammonium nitrate plant, there was an ammonium oxidation plant, there was a gas plant, there was a $1,300,000 steam plant, and there was a nitric acid concentration plant, and I would have to go to the records——

Mr. PARKER (interposing). Were all those things separate?

Doctor PARSONS. All those things are separate entities, but the steam plant is essential to the Haber process if you are going to use the method which is used at Syracuse.

Mr. PARKER. You have to have a steam plant and then what do you get to mix with it—do you get hydrogen in the same way; what is the process, by the way?

Doctor PARSONS. In the Haber process as operated in Germany and as operated at Syracuse and as was contemplated in the operation of plant No. 1 at Muscle Shoals, the hydrogen is obtained by the action of steam on red-hot coal or coke. It is impossible for me to explain this without using chemical terms, although I will try to do it.

Mr. PARKER. I understand that. That gives you carbonous oxide gas?

Doctor PARSONS. That gives you a mixture of hydrogen and carbon monoxide.

Mr. PARKER. That is what they used to call carbonous oxide, and it is the gas that burns a blue flame?

Doctor PARSONS. Yes. Then they pass those two gases over a specially prepared catalyst, which consists of iron oxide, with some chromium oxide in it.

Mr. PARKER. Is that a secret?

Doctor PARSONS. It is supposed to be more or less, but it is not. I know about it and so do many others. I think the temperature is about 350 degrees. Under those conditions carbon monoxide is converted, with some steam, to another equivalent of hydrogen and to carbon dioxide, and you get just as much more hydrogen as you had in the first place. The carbon dioxide has to be washed out at 30 atmospheres' pressure in a special apparatus, just like you make soda water.

Mr. PARKER. Is there any expensive chemical required to take it out?

Doctor PARSONS. You have to use some caustic soda to get out the last part of it.

Mr. PARKER. All this is a pretty cheap process of making hydrogen, is it not?

Doctor PARSONS. It is about as cheap as any process used extensively to make hydrogen in the world to-day. I think there are possibilities of other cheaper processes. In fact, the basic feature of the Haber process lies in getting cheap hydrogen. I understand in plant No. 1, so far as the cost of operation is concerned, 20 per cent of the cost was in the production of hydrogen and 50 per cent in its purification.

Mr. PARKER. That can be done cheaper than that, can it not?

Doctor PARSONS. It is being done cheaper than that now by the improvements that have been made.

Mr. PARKER. Are the plans in connection with plant No. 1, for production and purification, all right?

Doctor PARSONS. They will have to be changed.

Mr. PARKER. Which part?

Doctor PARSONS. The whole of it.

Mr. PARKER. The whole machinery?

Doctor PARSONS. Not the whole machinery, but there will have to be very extensive changes made in plant No. 1.

Mr. PARKER. What will that cost?

Doctor PARSONS. That comes in the cost I have given you.

Mr. PARKER. Having gotten your hydrogen, what is next?

Doctor PARSONS. They run the nitrogen in from the air at the same time that they make the original water gas. They get the nitrogen in that way. But in my opinion, it is not the best way of working. The proper way to work it, in my opinion, is to get the nitrogen from the Claude or Linde liquor-air plants.

Mr. PARKER. I thought the liquid air was a very expensive proposition.

Doctor PARSONS. Nitrogen by the Claude process would be produced for about 10 cents per thousand cubic feet, which makes it a very small proportion of the total cost.

Mr. PARKER. Is it expensive to make the two unite?

Doctor PARSONS. Not particularly.

Mr. PARKER. Is that where the catalyst comes in?

Doctor PARSONS. That is where the special catalyst comes in.

Mr. PARKER. Of course, you were employed by the Syracuse company, and you can not tell what their catalyst was?

Doctor PARSONS. I do not know; they kept it secret from me.

Mr. PARKER. Then how do you know that the other is better?

Doctor PARSONS. I have seen the results of the comparative tests made in the nitrogen fixation laboratory.

Mr. PARKER. That is only a laboratory experiment?

Doctor PARSONS. No. They have there a pretty big plant themselves.

Mr. PARKER. You are sure that the catalyst that they have developed in the Agricultural Department laboratory is the best in the world, and they say they think it is.

Doctor PARSONS. That is my opinion also.

Mr. PARKER. That gives you the ammonia?

Doctor PARSONS. That gives the ammonia; yes, sir.

Mr. PARKER. What is next in the Haber process?

Doctor PARSONS. That completes the Haber process.

Mr. PARKER. How do you turn that ammonia into explosives?

Doctor PARSONS. If they want to convert that into explosives it is blown with air over platinum gauze, heated red hot, and under those conditions the ammonia burns in the air, not to nitrogen and water, as it would ordinarily burn, but the platinum acting as a catalyst converts it into nitric oxide, which absorbed in water produces nitric acid.

Mr. PARKER. It makes a rather weak nitric acid, does it not?

Doctor PARSONS. As it comes from ammonia oxidation it gives you approximately 50 per cent, as Colonel Joyes told you.

Mr. PARKER. Do you not need much——

Doctor PARSONS (interposing). You can then concentrate it in a special concentrating plant, of which there is one already built at plant No. 1, which was built for that purpose.

Mr. PARKER. What is the cost of concentrating at plant No. 1?

Doctor PARSONS. That is done by means of absorbing the water with sulphuric acid in special towers and then boiling out the nitric acid.

Mr. PARKER. The sulphuric acid absorbs the water——

Doctor PARSONS (interposing). Then the sulphuric acid with the water in it is again boiled, and the water leaves it, and they use it over and over again.

Mr. PARKER. Is that a cheap process of getting the nitric acid, on the whole, or is it easier to get it by using sulphuric acid and the Chilean nitrates?

Doctor PARSONS. It depends entirely on the price. In this country it is made entirely by the Chilean saltpeter process, and probably will be for some time to come, so long as the Chilean saltperter is at its present price.

Mr. PARKER. With the Chilean saltpeter at its present price, that will make the nitric acid much cheaper than it is to make it the other way?

Doctor PARSONS. No; I am not prepared to say that. I think it is because in this country they have the nitric acid plants already built, and as I understand it, they do not want to invest the capital to make the change. If I was going to start in to-day to put up a large plant for the manufacture of nitric acid I should do it by the oxidation of ammonia, at the present price.

Mr. PARKER. That process does not need much power, but needs a great deal of steam and coal, does it not?

Doctor PARSONS. That is correct; the Haber process requires only one-tenth of the power of the cyanamid process, and about one-fiftieth of the power of the arc process used in Norway. The Norwegians could profitably turn their plants into plants to use the Haber process, and I think they would use it if it were not for the complications in connection with the German patents.

Mr. PARKER. If you were to use plant No. 1 for the manufacture of fertilizer I suppose you would take the ammonia and pass it through sulphuric acid to make the sulphate?

Doctor PARSONS. That would be the normal procedure at the present time.

Mr. PARKER. And the cheapest way to get sulphate of ammonia?

Doctor PARSONS. The cheapest way to get sulphate of ammonia; but personally I am inclined to believe that we are going to develop other methods, and I should not be at all surprised if this double sulphate and nitrate of ammonia, which is credited with having exploded in Germany, is what will ultimately be used.

Mr. PARKER. You would use that, although they had that tremendous explosion at the plant in Germany.

Doctor PARSONS. I do not think the explosion was due to the composition of the material; I think it was due to some other cause.

Mr. PARKER. I beg your pardon for asking you so many scientific questions, but I thought that was the only way to get the information, both for myself and other members of the committee.

Doctor PARSONS. I am very glad indeed to have your help. I think it will interest you to know something of the action of the catalyst in the oxidation of ammonia. If you take a mixture of ammonia and air and blow it through a layer of platinum gauze which is heated to a red heat, your ammonia and oxygen will combine entirely differently from any other combination which they can be made to make under any other conditions. If you put iron gauze there or copper gauze or silver gauze the action does not take place, but if you use the platinum you can blow it through almost as fast as you can blow it, and practically all of the ammonia will be converted into nitric oxide, which absorbed in water makes nitric acid. We do not know what does it, but we do know that that is the action that takes place. There are many incidents of the kind in connection with chemical products.

Mr. PARKER. The platinum is used to a certain extent for a catalyst, and it is so hard to get at present that I wanted to ask whether this catalyst, which is used by the Department of Agriculture, depended upon platinum for its composition.

Doctor PARSONS. It does not.

Mr. PARKER. Does it depend upon any rare metals that are hard to get?

Doctor PARSONS. I think it does not depend on rare metals only. It is generally known that most of the catalysts, the German catalyst, and I think the General Chemical Co.'s catalyst, and this one at the nitrogen fixation laboratory, are largely iron, and it does——

Mr. PARKER (interposing). Does it waste very fast?

Doctor PARSONS. No; this is a very substantial catalyst that they have here.

Mr. PARKER. Then as a general conclusion you think, with the aid of the Department of Agriculture, the No. 1 plant, with an expenditure of a million and a half dollars, can be turned into a productive plant for ammonia at reasonable rates.

Doctor PARSONS. I think it can; yes.

Mr. QUIN. Doctor Parsons, with what concern are you connected at this time?

Doctor PARSONS. I have no connection with any concern that has anything to do with the fixation of nitrogen.

Mr. QUIN. In whose interest are you down here?

Doctor PARSONS. I am here at the request of the committee.

Mr. QUIN. When these two nitrate plants at Muscle Shoals were started you were consulted about both of them, but you did not agree to the erection of plant No. 2, as I understand it.

Doctor PARSONS. That is correct.

Mr. QUIN. The evidence shows that plant No. 2, or the method of the fixation of nitrogen by the cyanamid process, had proven to be a success in this country. Why did you gentlemen not think about starting that plant first; because we were at war, and that is what the plant was being built for?

Doctor PARSONS. Because at the time we undertook that there was no present emergency, and we were trying to put in a process which would be capable of being used for fertilizer also, when the war was over.

Mr. QUIN. I would like to refresh your memory on that. I was here at that time; I have been on this committee ever since 1913, and in 1916 we got a bill through providing for the establishment of nitrate plants, and Mr. Washburn's testimony had a good deal to do with it. The cyanamid process was the one that they thought was going to be adopted. Congress declared war at the President's suggestion on the 6th day of April, 1917, and as I understood it, and the Congress understood it, we were in danger of not having sufficient nitrogen from the Chilean source. We did not know whether we would be cut off from that or not, and you claim now that an emergency did not exist. Well, these gentlemen went ahead and built plant No. 1, but it was constructed in such a way that it did not succeed. That is true, is it not?

Doctor PARSONS. Its first trial was not thoroughly successful.

Mr. QUIN. They testified before this committee that that plant was a failure.

Doctor PARSONS. I disagree with them. At its first trial it did not function any more than the Haber plant functioned in Germany in its first trial, and they had to go over it and try it out two or three times and rebuild it before it finally operated fully and successfully.

Mr. QUIN. They abandoned it, did they not?

Doctor PARSONS. No; it was carried on and made a perfect success at Syracuse.

Mr. QUIN. You mean a different plant was erected. There was a difference between the plant at Syracuse and the No. 1 plant at Muscle Shoals.

Doctor PARSONS. The process is essentially the same, but they have changed the mechanical construction, and they have changed the catalyst, as I have already testified.

Mr. QUIN. Why did they not change that and make the process at Muscle Shoals a success?

Doctor PARSONS. Because they had no time before the armistice. They found that the mechanical construction at Muscle Shoals was not right and that the catalyst which they used was inefficient and could not be made in large quantities.

Mr. QUIN. What did they change it for at Muscle Shoals?

Doctor PARSONS. They did not change it at Muscle Shoals.

Mr. QUIN. Some gentlemen testified that by making certain changes in the process that caused the thing to be a failure there. Some of these experts testified that way.

Doctor PARSONS. That by making changes in the General Chemical Co.'s process it ceased to be a failure?

Mr. QUIN. They spoke about the fact that they changed some of the processes in the construction of this plant at Muscle Shoals.

Doctor PARSONS. My understanding is that the plant was built down there the best that they were able to build it after consultation between the General Chemical Co.'s engineers and the engineers of the Government, and that the Government engineers insisted on certain changes in the plant construction which the General Chemical Co.'s engineers did not thoroughly agree to; and as a result, anyway, both of them felt that the other was more or less to blame for the failure of its early operation. But as a result of the experiences which they gained there a new factory has been built which is functioning completely, and functioned well from the first day it turned over its wheels.

Mr. QUIN. Then the one they constructed with Government funds at Muscle Shoals did not turn out the stuff, and the one they erected for themselves did turn it out, and you say they produced several more tons per day than they anticipated.

Doctor PARSONS. The one they erected at Muscle Shoals did not do it, but if they had gone on and made the necessary changes and installed the apparatus which they now have installed at Syracuse it would have functioned; that has been proven by the actual fact that the Syracuse plant is functioning perfectly at the present time.

Mr. QUIN. Then they put in nitrate plant No. 2, after they had experimented with the Haber process. They knew that plant No. 2 would work, did they?

Doctor PARSONS. They did not put in plant No. 2 after they had been experimenting with plant No. 1. Plant No. 1 was barely started when conditions grew worse and the Ordnance Department felt that it was absolutely necessary for the sake of preparedness to push the construction of nitrate plants which would make ammonium nitrate in quantity from the start. We had cyanamid plants on this side of the water, and we knew positively that they could make ammonium nitrate by that method, irrespective of the cost. It was put in as an emergency war measure, and ran from the first day it was completed.

Mr. QUIN. They have testified before this committee that there are new processes now which are liable to knock out both of these processes and produce the nitrogenous products at about one-half of what they are costing now. Do you know about that?

Doctor PARSONS. I think I know all the processes for nitrogen fixation which are at all economical and which are being used in the world, and I do not know to what you refer.

Mr. QUIN. They did not tell us what they are.

Doctor PARSONS. They are referring unquestionably to the improvements in the Haber process, because they are the only ones actually doing it to-day.

Mr. QUIN. Did you read the report of the British Nitrogen Products Commission, appointed for the purpose of looking into the fixation of nitrogen.

Doctor PARSONS. I did, and I read it with care.

Mr. QUIN. In that report, of 1920, that commsision, consisting of eminent scientists, doctors of chemistry and kindred subjects, stated several things, and wound up by saying that "the commission recommends that this cyanamid process should be established in Great Britain without delay, either by private enterprise, supported, if necessary, by the Government, or as a public work." What do you say about that report of the British commission?

Doctor PARSONS. I say that the report of the British commission was made during war time. I was in consultation with the most of the members of that committee frequently during the war. I saw them on the other side, and I saw Doctor Harker on this side. I know most of the important men on the commission personally, and some of them intimately.

Mr. QUIN. This was in 1920?

Doctor PARSONS. That is when it was issued, not when it was made. They believed in England that they should put in both processes, so that they would know the operation of each. They also in that report made a recommendation not only for the Haber process, but they spoke in much higher terms for the Haber process than the cyanamid process, and the Haber process is being put in in England to-day, and the cyanamid process has been completely abandoned and will never be put in England or any other country, in my opinion.

Mr. QUIN. Do you not give some weight to Mr. Ford's statement that he could put in and would put in the cheapest process?

Doctor PARSONS. I do not know what Mr. Ford will do. There is nothing to indicate it in the testimony.

Mr. QUIN. His engineer said they can make this stuff 50 per cent cheaper than it is being made now.

Doctor PARSONS. No; Mr. Mayo said 33⅓ per cent. Mr. Mayo also stated that he had not made any estimate of cost.

Mr. QUIN. They bind themselves to run that plant at its full capacity for fertilizer, and that is what every farmer of this country is interested in, outside of their patriotic spirit for national defense. Do you not think that is true?

Doctor PARSONS. I do not so understand it. I understood from the testimony that they would not run it except at a profit. But I am not arguing against Mr. Ford.

Mr. QUIN. As to what process his engineers might have in mind, you know nothing about that?

Doctor PARSONS. Except as contained in their testimony. I have read that.

Mr. QUIN. There has been a great deal of discussion about the different processes, and about the fertilizer that could be made and about the prices at which it could be made. But I have been looking for somebody to tell us why it is that a cow that is red, that eats green grass, gives white milk. But we have not had that yet. There is not any doubt but what they have got the water which they can dam up to get the horsepower, is there?

Doctor PARSONS. I have every reason to believe they will get the horsepower if they dam the river.

Mr. QUIN. There is no doubt if they get that that they can make the same kind of fertilizer down there that is made elsewhere.

Doctor PARSONS. I think horsepower has but little relation to that.

Mr. QUIN. You think these men are all mistaken?

Doctor PARSONS. I think the farmer has been made a cat's-paw from the beginning to try to get the Muscle Shoals project built. He has been shown a beautiful "mirage" by those who have their own objects to attain.

Mr. QUIN. There are some people who believe in the farmer being taken care of.

Doctor PARSONS. I believe in that, too, most heartily.

Mr. QUIN. Do you not think if you can get that big plant running down there, it will have a salutary effect on the production of fertilizer?

Doctor PARSONS. Not so far as plant No. 2 is concerned. I do not believe Mr. Ford or anyone else can operate plant No. 2 to make fertilizer.

Mr. QUIN. Do you believe Mr. Ford is going to lose his fortune on that proposition?

Doctor PARSONS. I think if Mr. Ford runs plant No. 2 to its capacity to make nitrates, he will lose all his fortune in 20 years. I simply want you to be sure that he will do it.

Mr. QUIN. I do not think Mr. Ford needs any guardian, so far as that it concerned.

Mr. FISHER. How long were you in the employ of the Federal Government?

Doctor PARSONS. From the summer of 1911, August, I think, until the 1st of November 1919.

Mr. FISHER. When the war broke out in Europe, or immediately thereafter, and our Government, through its officials, began to plan a nitrate program, I will ask you whether or not they did not put you on a commission, with your expenses paid, and also paying you a salary, while you traveled all over Europe, examining different types of nitrate plants?

Doctor PARSONS. That is correct.

Mr. FISHER. I will ask you whether or not when you came back you later severed your connection with the Government, and ever since that time, in every single effort that the United States has made to carry out a nitrate program in connection with Muscle Shoals you have volunteered as a witness against the Government.

Doctor PARSONS. I have not. I appeared as a witness. I have been called in before, and I did it before I was out of the Government, and I have not changed my testimony from the first minute, from the time I wrote a report for the Government up to and including to-day.

Mr. FISHER. Doctor, you have always been opposed, have you not, to what the other experts recommended?

Doctor PARSONS. Oh, no; they agreed with me absolutely on the original report, and they adopted my report practically unanimously. That is all in the record.

Mr. FISHER. You appeared before the Senate Committee on Agriculture and opposed the proposition that the Government then presented, did you not?

Doctor PARSONS. I did not. I did not appear before the Senate Committee on Agriculture at all. I was not there.

Mr. FISHER. You did not oppose the proposition when it was before the Committee on Appropriations, to complete the dam?

Doctor PARSONS. In the House—my testimony is here.

Mr. FISHER. Before the House committee.

Doctor PARSONS. Before the House committee I did not oppose the building of the dam on the basis of the power being used for the development of industries in the South. I am not opposed to it to-day; I am in favor of it to-day.

Mr. FISHER. Whenever the Government connects the completion of the dam with the manufacture of nitrates or fertilizer, then you oppose it?

Doctor PARSONS. I have always stated, and I so state now, that the idea of building or completing Dam No. 2 with the idea of using that power through the cyanamid process for the fixation of nitrogen, if that is the idea, is a false idea and will not lead to the conclusion you expect.

Mr. FISHER. When you testified before the Committee on Appropriations of the House on the sundry civil appropriation bill, when the proposition of completing the dam was being considered, you stated that the Atmospheric Nitrogen Corp. at Syracuse, N. Y., had a process which they perfected. Have they ever manufactured nitrate by that process?

Doctor PARSONS. They have run it successfully from the day it started operation up to the present time. That plant was built for an output of 10 tons per day, and it has turned out 12 tons per day practically continuously from the day the first wheel turned over.

Mr. FISHER. Is that concern owned in part by the Solvay Co.?

Doctor PARSONS. No; the Semet-Solvay Co.

Mr. FISHER. Are they all American citizens?

Doctor PARSONS. To the best of my knowledge and belief, yes.

Mr. FISHER. The Solvays are all American citizens?

Doctor PARSONS. In this country?

Mr. FISHER. I mean the stockholders.

Doctor PARSONS. As far as I know. It may be that the Belgian—it is the Semet-Solvay Co. and the General Chemical Co. that own this plant, not the Solvay. The Solvay Process Co. was originally a Belgian company. They started a subcompany in this country to produce sodium carbonate. Some of its stock is still held in Belgium probably, but it has never been questioned as to the ownership of its stock in any essential at any time by the Alien Property Custodian or others. The Semet-Solvay, I think, is not owned in Belgium, or at least I never heard that it was. The General Chemical Co. is an almost completely American company, started and developed in this country by an American capital, and none but Americans control its affairs, so far as I know.

Mr. FISHER. When you appeared before the House Committee on Appropriations in opposition to the appropriation for the completion of the dam there was no other question before that committee at that time except the completion of the dam, but you still opposed the appropriation.

Doctor PARSONS. I opposed it simply and solely on the basis of its being used for the fixation of nitrogen; that it was not warranted for, and I directly and definitely stated that I agreed entirely with Colonel Cooper that it should be completed as a dam for the industrial development of the South.

Mr. FISHER. Did you not have it stated to you at that hearing that the only question that they had for decision was in connection with the money asked for the completion of the dam?

Doctor PARSONS. I think Mr. Byrns did make that statement, and I told him, as all the testimony shows, that the whole thing that the bill was being put through Congress for was to carry out plans for the so-called nitrogen corporation. This proposed corporation was to be run by the Government, without taxes, without interest, without amortization, and entirely freed from the trust laws, in competition with American industry, putting the Government in business in a way that it has never been in business before. I did not believe in the dam being completed for any such purpose, but if the completion of the dam was to be for the benefit of public utilities, selling the power to the cities around, or

selling it to any chemical or metallurgical industry that was down there, I was entirely in favor of it, and I am to-day.

Furthermore, I think it is perfectly possible to make a nitrogen fixation industry at Muscle Shoals which will be a thoroughly successful industry and which will do a good deal of what hope it will do for the farmer, if you will do it right. But if you are going to bring it into politics the way it has been done, it will never help the farmer on the basis of running plant No. 2, and getting away from the power proposition.

If you would like to know what I think should be done, I shall be glad to give an outline of it to you.

Mr. FISHER. I will be glad to have it.

Doctor PARSONS. I think the Government should first find out what it has to sell and then having found that out it can put this before the people of the country and offer it to them for bids and sell it to the highest bidder, who will put it through for the purposes you want.

Mr. FISHER. Are you not aware of the fact that the Secretary of War, through the Chief of Engineers, communicated with every concern in the United States which he thought was interested in the development of Muscle Shoals?

Doctor PARSONS. As I read it, he asked them what they thought should be done with it, and whether they had any suggestions to make, and one or two of them did make suggestions. It has never been formulated as to what you had to sell, and nobody knows to-day what you have to sell down there, and the minute it is known what you have to sell I think you will get offers for it. I thing if plant No. 1 was put up for sale, with a certain amount of power to go with it, I could myself obtain associates and make a nitrogen industry down there along modern lines, the same as they are doing in Germany, the same as they have started to do in Norway, the same as they are doing in England, and just as they are planning to do in France, and in Italy, and as they have started to do at Syracuse, which will fix nitrogen and make nitrogen fertilizer much cheaper than you will ever get it by any possible use of the cyanamid process. I think it can be done successfully.

Mr. FISHER. The trouble is that the Secretary of War has not received any offers except the ones we are now considering.

Doctor PARSONS. Nobody can make an offer, because they do not know what they are offering for. They are all tied up with lawsuits and politics, and you do not know what you can make an offer for.

Mr. FISHER. Do you know of any other concern than those who have made the offers we are now considering have communicated with the War Department, or with the Chief of Engineers, to find out what the Government has to sell?

Doctor PARSONS. They have considered the situation, and I do not think you will get any more offers as long as it is tied up with the political situation as it is at the present day.

Mr. WRIGHT. Doctor, you think probably there will be something developed by which the production of commercial fertilizer will be greatly reduced in price?

Doctor PARSONS. I beg your pardon.

Mr. WRIGHT. You think there will be some art or arts developed which will greatly reduce the price of commercial fertilizers?

Doctor PARSONS. I hope so. Fertilizer at the present time, or rather fertilizer constituents, are cheaper than they have been, I think, in the history of the world; at least some of them are.

Mr. WRIGHT. Conditions are not normal now.

Doctor PARSONS. I do not expect to see much advance from present conditions, if they are not normal. I think that Germany having a surplus and increasing as she is increasing, that before very long nitrogen compounds will be imported; in fact, they are now from abroad. I think we are going to have competition which will keep down the price of ammonium sulphate.

Mr. WRIGHT. Upon the whole, you think the art will be developed by which the cost of production will be decreased in price?

Doctor PARSONS. I have every reason to think so. I believe in progress.

Mr. WRIGHT. But you do not think that can be done by the cyanamid process?

Doctor PARSONS. I never was more certain of anything in my life than I am of that.

Mr. WRIGHT. I understand the Ford offer is based on using the cyanamid process?

Doctor PARSONS. So he states—at plant No. 2.

Mr. WRIGHT. Let me call your attention to section 14 of the Ford offer as modified. I will read it to you as it has been modified. It says: "The company agrees

to operate nitrate plant No. 2 at the approximate annual capacity of its machinery and equipment in the production of nitrogen and other commercial fertilizers (said capacity being equal to approximately 110,000 tons of ammonium nitrate per annum) throughout the lease period, except as it may be prevented by strikes, accidents, fires, or other causes beyond its control; and further agrees (a) to determine by research whether by means of electric furnace methods and industrial chemistry there may be produced on a commercial scale fertilizer compounds of higher grade and at lower prices than fertilizer-using farmers have in the past been able to obtain, and to determine whether in a broad way the application of electrictiy and industrial chemistry may accomplish for the agricultural industry of the country what they have economically accomplished for the other industries, and if so found and determined to reasonably employ such improved methods."

Doctor PARSONS. How does that differ from the original? It sounds pretty much the same to me.

Mr. WRIGHT. The only change is in line 2 of that section, striking out the word "compounds" and using the word "fertilizer" and inserting the word "commercial" before the word "fertilizer," and then there is added to subsection (a) of section 14 this language, "and if so found and determined, to reasonably employ such improved methods."

Doctor PARSONS. I can not see any essential difference between that and the original. It is the other clauses in there which make the basic difficulty in the whole situation.

Mr. WRIGHT. That is the stumbling block to you.

Doctor PARSONS. No; there is the testimony that they will not do it unless they can do it at a profit.

Mr. WRIGHT. I am drawing your attention to what processes Mr. Ford is going to use under this offer. I want to know if you insist that he is confined to the cyanamid process?

Doctor PARSONS. I say in plant No. 2, yes; and he has stated that plant No. 1 is going to be converted into an automobile factory.

Mr. WRIGHT. Let us see what he offers about plant No. 2 as modified. Section 14 provides that he agrees to operate the plant at the approximate annual capacity, and that is followed by subsection (a) in these words, "to determine by research whether by means of electric-furnace methods and industrial chemistry there may be produced on a commercial scale fertilizer compounds of higher grade and at lower prices than fertilizer-using farmers have in the past been able to obtain, and to determine whether in a broad way the application of electricity and industrial chemistry may accomplish for the agricultural industry of the country what they have economically accomplished for the other industries, and if so found and determined, to reasonably employ such methods."

Doctor PARSONS. I think that is highly desirable, but he promised to conduct this research in the first place.

Mr. WRIGHT. That is part of his agreement?

Doctor PARSONS. Certainly.

Mr. WRIGHT. Then he is not confined to the cyanamid process, is he, in the operation of plant No. 2?

Doctor PARSONS. Yes; because plant No. 2 was only built for the cyanamid process and can not be converted into anything else for the fixation of nitrogen. I do not deny that thit is quite possible that those carbide furnaces might be used as Mr. Swann told you, for the conversion of certain phosphoric rocks into concentrated phosphoric acid, but that is a question for the future to determine. We are at the present time profitably spending a good deal of money through the Bureau of Soils and through the Nitrogen Fixation Laboratory for certain purposes along those lines. The Bureau of Soils has been working for some time on the production of phosphoric acid by electric-furnace methods, and they have made a great deal of progress, which is being utilized in three plants in this country, two of them running and one closed down.

Mr. WRIGHT. Your whole testimony is based on the proposition that Mr. Ford's offer only contemplates the manufacture of commercial fertilizer or compounds by the use of nitrate plant No. 2, which uses the cyanamid method and employs the cyanamid method.

Doctor PARSONS. My testimony has not been so directed at all, although you may think so. My testimony has been, so far as possible, to explain to you the technical processes for the fixation of nitrogen.

Mr. WRIGHT. I will say as far as your testimony relates to this provision of the Ford contract.

Doctor PARSONS. My testimony is that plant No. 2 can not be utilized for the fixation of nitrogen commercially and can not be converted into any other known process or any process which is even in sight for the fixing of nitrogen.

Mr. WRIGHT. Except by the use of the cyanamid method.

Doctor PARSONS. By the use of the cyanamid method or any other method.

Mr. WRIGHT. You construe the offer to mean that he is going to confine himself to the cyanamid method in the operation of plant No. 2.

Doctor PARSONS. If he is going to fix nitrogen at plant No. 2, that is the only method he can use. I am not talking about the other things he may develop in phosphoric acid and potash and other schemes, which may be visionary or may turn out to be practical.

Mr. WRIGHT. What I want you to see, if I can, is that in addition to his positive offer to operate plant No. 2 at the approximate present annual capacity of its machinery and equipment in the production of nitrogen and other commercial fertilizers on the basis of 110,000 tons a year, he further agrees to "determine by research whether by means of electric-furnace methods and industrial chemistry" that these ingredients can be produced on a more economical basis; and if he so finds, to employ those methods. That would cover your objection, would it not?

Doctor PARSONS. No; if you turn that power over to him I want you to get from him some kind of an agreement that he will do it.

Mr. WRIGHT. I am talking about the manufacture of fertilizer compounds. I am not talking about power.

Doctor PARSONS. I do not think you have any assurance whatsoever that you are going to get any commercial fertilizer compounds, and my opinion is that before that immensely valuable project is turned away from the people of the United States you should have some definite assurance or contract that can not be questioned.

Mr. WRIGHT. You do not think it is a good thing?

Doctor PARSONS. I can not see that it is.

Mr. WRIGHT. Although he agrees to operate the plant at its present annual capacity and agrees further that he will determine by research whether the cost can be reduced by any kind of new method, and if it can be he will employ that method?

Doctor PARSONS. He does not so agree. There is another proposition in there in reference to "other causes," or something like that.

Mr. WRIGHT. You said this morning that you were not a lawyer.

Doctor PARSONS. I am not.

Mr. WRIGHT. And you would not care to be catechized about legal or financial questions or in reference to the construction of the contract?

Doctor PARSONS. I said about legal questions of the construction of the contract I did not think my opinion would be of any value.

Mr. WRIGHT. These words over which you stumble so much are the words in section 14, where it says, "except as it may be prevented by strikes, accidents, fires, or other causes beyond its control." Those words do not mean and can not mean that he is confined to that process in the making of ingredients. Those words are simply intended to include those things that no human agency can control, or probably can not control, such as strikes, fires, or accidents; and the words "other causes beyond its control" are all of that same class of words along the same line of meaning.

Doctor PARSONS. I interpreted it just the way Mr. Mayo interpreted it, and Secretary Weeks, and as the Secretary of Agriculture and all who have looked into the situation from an absolutely unbiased standpoint evidently interpreted it, and I think they see it as I see it.

Mr. WRIGHT. I presume one might reasonably infer you are against the Ford offer?

Dr. PARSONS. As it stands; yes sir. I think you can better it very greatly.

Mr. WRIGHT. What is that substance that you assume is going to be turned into the river and destroy navigation?

Doctor PARSONS. It is the sludge that comes from the conversion of the cyanamid and ammonia.

Mr. WRIGHT. Do you not think that a place has been provided to care for that, besides putting it into the river?

Doctor PARSONS. No; I do not, to that extent.

Mr. WRIGHT. That it has been thought would relieve that condition?

Doctor PARSONS. If you have provided for 300,000 cubic yards for some years; yes.

Mr. STOLL. Where is your office?

Doctor PARSONS. No. 1709 G Street, Washington.

Mr. STOLL. Have you attended many of these hearings?

Doctor PARSONS. Here?

Mr. STOLL. Yes.

Doctor PARSONS. No, sir.

Mr. STOLL. Any of them?

Doctor PARSONS. I came here to hear Mr. Swann's testimony, and incidentally, as he was delayed, while I was waiting to hear his testimony I heard certain of the other testimony, and I have read certain parts of that which you have had printed since.

Mr. STOLL. Are you connected with any fertilizer companies?

Doctor PARSONS. I am not, directly or indirectly.

Mr. WRIGHT. There is one question I forgot to ask. I believe all scientific men differ widely on these scientific questions.

Doctor PARSONS. I do not think scientific men differ at all on the Haber process to-day.

Mr. WRIGHT. Is not that characteristic of scientific men?

Doctor PARSONS. We are human beings like everybody else.

Mr. WRIGHT. Did you ever see two doctors who would agree about any given proposition?

Doctor PARSONS. Medicine is not an exact science—chemistry is.

Mr. WRIGHT. You are an expert, are you not?

Doctor PARSONS. You will have to judge that for yourself.

Mr. WRIGHT. Is it not a fact that they do not ever agree—and I am not saying anything to their discredit—but on a proposition like this, for instance, you say that the cyanamid process is obsolete, and that the Haber process is the correct process; while a man, who is just as eminent as you, would follow you on the stand and he would swear that the Haber process was impracticable and the cyanamid process was the only one that was feasible.

Doctor PARSONS. I would like to find one in America that will say that at the present time—who is still sane.

Mr. WRIGHT. I do not think you will ever get two of them that will agree.

Mr. MILLER. I see in the British Nitrate Commission's report that they speak very highly of the arc process or the electric process. That makes nitric acid, does it?

Doctor PARSONS. Yes; that is one of the basic reasons why it is not used in this country; and also it is very wasteful of power. It uses five times as much power as the cyanamid process, and it uses approximately 50 times as much power as the Haber process. If it was not for the Haber patents—and, I think, I have a basis for this statement (it can not be used in Norway, although it can be used in the United States)—I think the arc process in Norway would be changed into the Haber process in a year, because they could use their water power and make their hydrogen electrolitically, and they could turn out five times the amount of nitrogen, in ammonium salts instead of nitrates, than they can to-day, and do it cheaper.

Mr. MILLER. There are two of those plants in my country in the far West: The American Nitrogen Products Co., with a small plant at a place called La Grange; and another one near Vancouver; and, I think, they are very successful.

Doctor PARSONS. I think one of them has operated; and I think it was successfully operated on sodium nitrate, which was taken by the dye industry several years ago; but at the present time there is no market, because the Germans are sending it in. I do not think that they have ever sold nitric acid extensively commercially or ammonium nitrate for fertilizer purposes or any fertilizer constituents to any extent or have any expectation of doing so.

Mr. MILLER. I know they are shipping nitric acid in tank cars out there.

Doctor PARSONS. You have a limited market on the Pacific coast for nitric acid, which, if that plant is small, it can probably take for awhile.

Mr. MCKENZIE. The cost of plant No. 2 is something like $67,000,000, I believe?

Doctor PARSONS. $69,000,000, and a little over.

Mr. MCKENZIE. Are you familiar with the so-called Alabama Power Co.'s offer?

Doctor PARSONS. I have not read it; but I have heard just about this: That the offer comprises an offer to complete the dam without cost to the Govern-

ment, on a 50-year basis, and that they are to give the Government 100,000 horsepower. Beyond that I have no knowledge of the offer. I have not read it; I do not know a single officer of the Alabama Power Co. personally, and I do not know any of them by sight, except Mr. Martin, and I would not have known him except that he happened to stand up and answer a question on the day that Mr. Swann's testimony was given, just before Mr. Swann testified.

Mr. McKENZIE. You understand that under that offer the Government retains these two plants, No. 1 and No. 2?

Doctor PARSONS. Yes, sir.

Mr. McKENZIE. Did you hear Mr. Martin's testimony, in which he stated that they have been approached or had some information that certain companies would be willing to take over these plants and operate; when he was questioned as to whether the Government would be at a great disadvantage?

Doctor PARSONS. I did not hear his testimony. I did not know he made that statement. I have not read his testimony.

Mr. McKENZIE. I think it is true that he made the statement substantially as I have put it in the record. According to your testimony you look upon plant No. 2 as merely junk and think that it is absolutely worthless so far as a manufacturing, going plant is concerned.

Doctor PARSONS. Yes on the last statement; no on your first statement. I think plant No. 2 should be left for some time until we have our commercial plants in the country prepared to turn out nitrogen; in view of possible emergency plant No. 2 should be kept available for the production of raw material for explosives. I think that very strongly.

Mr. McKENZIE. But it is your contention, however, that it would be impossible for any company to undertake to successfully manufacture nitrates at that plant?

Doctor PARSONS. That is very strongly my opinion; yes, sir.

Mr. McKENZIE. Then, as a matter of fact, if the Alabama Power Co.'s offer should be accepted you think that the Government would simply have that plant standing there without ever being operated at all.

Doctor PARSONS. I think so, unless they might possibly operate it for calcium carbide. You might possibly do that, which would enable you to pay all the expenses in connection therewith. That is, a certain amount of calcium carbide would be taken in the South for the manufacture of acetylene gas for autogenous welding. For that purpose you might utilize that plant and have it pay for its upkeep.

Mr. McKENZIE. But do not operate it as a plant for fertilizer production.

Doctor PARSONS. I think the other hundred thousand horsepower should be used, and could be used to very great advantage: I think it might be used in the electrolysis of water, which would help plant No. 1 to obtain the hydrogen.

There is a little calculation I have made showing what interest it might be possible to obtain from the hundred thousand horsepower which is unquestionably salable by the Government. The estimates which the Ordnance Department put in are based on three-quarters of a mill per kilowatt hour. If you sell that horsepower for three-quarters of a mill on the average, it amounts to $657,000 a year, and if you take that $657,000 a year and put it in a sinking fund as the smaller sum which Mr. Ford offers is suggested to be put into a sinking fund, that $657,000, in 94 years at 4 per cent compounded, as given in the Secretary of War's report, would be equal to $676,572,030, instead of $40,000,000, which the other one would amount to on exactly the same basis. At 5 per cent interest it would be over $1,200,000,000.

Mr. McKENZIE. You have in mind the offer of the Alabama Power Co.?

Doctor PARSONS. No; I have in mind the question of the sale of 100,000 horsepower. I do not care whether the Alabama Power Co. sells it or anybody else. You can sell it, and I think it is perfectly salable at that figure.

Mr. McKENZIE. The Alabama Power Co. only offers to give to the Government 100,000 secondary horsepower.

Doctor PARSONS. I am talking about the first secondary horsepower. In the testimony before the sundry civil subcommittee of the Committee on Appropriations in February, 1921, Colonel Cooper estimated secondary horsepower at 1.2 mills, and the primary horsepower at 4.4 mills, and I am putting this at three-quarters of a mill. I say I think you would have no difficulty in selling it at that price.

Mr. McKENZIE. You have given us some startling figures in connection with this proposition. What do you say it would cost the Government, or Mr. Ford, or anyone else, to transform plant No. 2 from a cyanamid plant?

Doctor PARSONS. Plant No. 2 can not be transformed without transforming it from the ground up, or building a new one, or transferring it from the ground on which it stands and building a new one.

Mr. McKENZIE. How does it injure the ground.

Doctor PARSONS. The plant is not prepared for it. There are a few things in it which could be used; for example, the power line, and a small portion of the liquid-air plant, and one or two minor things might be used in the Haber process later, but the furnace building can't be, nor would there be any use for the autoclave plant or the cyanamid plant. The ammonium nitrate plant could be used the same as at plant No. 1 for the production of ammonium nitrate. I think, furthermore, that anyone purchasing plant No. 1 should eliminate from plant No. 1 every particle of machinery with which the General Chemical Co. designed, so that they could get rid of any possible lawsuits or difficulties.

Mr. McKENZIE. How much did you say it would cost to change plant No. 1 so it would be an up-to-date plant for the manufacture of this product under the modified Haber process?

Doctor PARSONS. I believe plant No. 1 can be converted into a plant which would operate successfully, perhaps, on a 30-ton basis, the original basis of the plant, for between one and a half and two million dollars.

Mr. McKENZIE. I want to ask you just one question in conclusion. Are we to understand that if we accept the Ford offer, or the offer of the Alabama Power Co., that the Government would lose this $1,200,000,000?

Doctor PARSONS. I have not said the Government was going to make this money. The Government is not in the habit of putting its money in a sinking fund and keeping it for 94 years and compounding it semiannually, as the plan proposed in the Ford offer would do, according to the statement prepared by the Secretary of War. I simply said that there was a comparison; Mr. Ford has spoken of a sinking fund of $40,000 annually on Dam No. 2. Here is another sinking fund, identically parallel, of $657,000 incurred annually from Dam No. 2, which, if you do the same thing with it, would amount to that money in that time. But I do not think the Government is going to do it.

Mr. McKENZIE. If we got the power, then we could sell the power and keep the fund together that length of time, putting all those things together; that is what it would amount to?

Doctor PARSONS. It would amount to that, taken exactly from the Secretary of War's figures. If you take that figure of $19.868, counting it for 94 years, as given by him, it amounts to $40,919,798, and you will find by division that $1 semiannually in 94 years amounts to $2,059.58. If you multiply one-half of $657,000 by that figure, you will get the figure I gave you, $676,572,030, and the figures are right, because I had somebody else check them, and I know they are right.

Mr. McKENZIE. We are very much obliged to you for the testimony you have given us, and the committee will now stand adjourned, subject to the call of the chairman.

(Thereupon the committee adjourned, subject to the call of the chairman.)

APPENDIX A.

Mr. Cooper is an associate of Stone & Webster (Inc.) as vice president and a director of the Mississippi River Power Co., which sells power to St. Louis, East St. Louis, Hannibal, Alton, Quincy, Burlington, Fort Madison, Keokuk, and adjacent territory. It is one of the largest hydroelectric plants in the world.

Other Stone & Webster Co. (Inc.) properties are: Baton Rouge Electric Co.; Blackstone Valley Gas & Electric Co.; Cape Breton Electric Co. (Ltd.); Central Mississippi Valley electric properties; Columbus Electric Co.; Columbus Power Co.; Columbus Railroad Co.; Connecticut Power Co.; Dallas City, Illinois, Light Co.; Eastern Texas Electric Co.; Edison Electric Illuminating Co., Brockston; Edison Light & Power Co., Abingdon and Rockland; El Paso Electric Co.; Fall River Gas Works Co.; Fort Madison, Iowa, Electric Co.; Galveston Electric Co.; Galveston, Haston Electric Co.; Galveston, Haston Electric Railway Co.; Haverhill Gas Light Co.; Houghton County Electric Light Co.; Houghton Electric Traction Co.; Key West Electric Co.; Lowell Electric Light Corporation; Millerton Electric Light Co.; Mississippi River Power Co.; North Texas Electric Co.; North Texas Traction Co.; Nova Scotia Tramway & Power Co. (Ltd.); Pacific Northwest Traction Co.; Paducah Electric Co.; Pawtucket Gas Co., New Jersey; Ponce Electric Co.; Public Service Investment Co.; Puget Sound Electric Railway; Puget Sound Interurban Railway & Power Co.; Puget Sound Power & Light Co.; Reno Power, Light & Water Co.; Savannah Electric Co.; Savannah Power Co.; Sierra Pacific Electric Co.; Sydney & Glace Bay Railway Co. (Ltd.); Tacoma Railway & Power Co.; Tampa Electric Co.; Tarrant County Traction Co.; and Trucker River General Electric Co.

APPENDIX B.

COPY OF PROPOSED AMENDED CONTRACT FOR COMPLETION AND LEASE OF MUSCLE SHOALS BY FREDERICK E. ENGSTRUM.

THE ENGSTRUM PROPOSAL TO LEASE MUSCLE SHOALS.

WAR DEPARTMENT,
Washington, February 24, 1922.

DEAR MR. SPEAKER: I inclose herewith an offer for the Muscle Shoals properties submitted by Frederick E. Engstrum which I think should be considered in connection with the investigations now being made by Congress.

JOHN W. WEEKS,
Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

Amended Form of Proposed Contract for Completion and Lease of Muscle Shoals Project by Frederick E. Engstrum.

[Omit the words struck through and insert the words printed in italics.]

1. PARTIES.—Memoranda of contract made this —— day of ——, 1922, by and between the Government of the United States, party of the first part, and hereinafter referred to as the Government, and Frederick E. Engstrum, of the city of Washington, D. C., for and in behalf of a corporation to be formed by him to carry out the provisions of this contract and to be governed by a board of seven directors, one to be selected by the Secretary of War, one by the Secretary of Agriculture, and the remaining five by proponent, party of the second part, and hereinafter referred to as the lessee.

2. LEASE.—The lessee hereby leases all the property—real, personal, or mixed—now owned or hereafter acquired by the Government in connection with or forming

part of, ~~or the possession, use, construction, maintenance, operation,~~ or extension of the Muscle Shoals project, or any part or appurtenance thereof, ~~including~~ *excluding* the steam plant, located at Gorgas, Ala., on the Warrior River, ~~together with,~~ *but including the* transmission lines *from said plant to Muscle Shoals for use at present location or elsewhere as will best serve the purposes of this lease.* Said property is included or intended to be included in the maps, deeds, descriptions, invoices, lists, and schedules furnished to the lessee by the Government and receipted for and such maps, deeds, descriptions, invoices, lists, and schedules, together with receipts for same, hereinafter referred to as the schedule, shall be a part of this agreement and shall bind both parties as truly as if they were written herein.

3. TERM.—This lease is to continue in full force for a period of 50 years from date the lessee acquires possession of the property. The lessee shall return said property at the termination of this lease to the Government in good operating condition, subject to damage beyond fault or control of the lessee.

4. PLANS AND SPECIFICATIONS.—It is mutually agreed by both the Government and the lessee that, for and in consideration of the lease, construction, operation, rights, privileges, payments, and other considerations hereinafter mentioned or otherwise provided for in this agreement, that the lessee will construct Dam No. 2, power station, *steam plant No. 2 to a capacity of 90,000 K. W. and steam plant No. 1 to a capacity of 10,000 K. W.* and such other structures now under construction or agreed to be constructed at Muscle Shoals, on the Tennessee River, in the State of Alabama, and hereinafter referred to as the "Property," as are set forth and described more particularly in the maps, plans, specifications, photographs, and other engineering data (hereinafter referred to as the plans), copies of which have been delivered to lessee and duly receipted for by lessee, and such plans thus receipted for are hereby made an essential part of this contract and are as binding on both parties as if they were fully set forth and written herein. When the Government shall require the construction of Dam No. 3, for which there are no complete engineering plans, the lessee agrees ~~and is~~ to build the same on plans and specifications to be prepared by the Government and on a location to be approved by the Government. ~~and the lessee will lease the same under the terms of this contract.~~ *Lessee also agrees to build, at dam No. 3, another nitrate plant, of the most improved process, by plans and specifications submitted to and approved by the Secretary of War and the Secretary of Agriculture, which plant shall have the same relative output capacity to the power to be generated at dam No. 3, as is the combined capacity of nitrate plants Nos. 1 and 2 to the power to be generated at dam No. 2; other dams and nitrate plants, which may be built, to conform to the same terms.*

5. LOCKS OR LIFTS.—It is further agreed that the lessee will construct for the Government the locks or lifts for the purpose of maintaining navigation over the dam or dams to be constructed at Muscle Shoals.

~~6. MANUFACTURE OF NITRATES.—The lessee agrees to operate the nitrate plants, now a part of the property (which have an estimated capacity of 120,000 tons per annum), together with other plants that may hereinafter be built, to manufacture such fertilizer compounds or mixtures and complete fertilizers as approved by the Secretary of Agriculture, and to commence operation of one plant within one year after it acquires possession, and as soon as sufficient power is generated by the hydroelectric plants belonging to the property, it will operate at full capacity all the plants that can be operated from the receipts of the sale of the fertilizer compounds, together with the receipts from one mill per kilowatt hour, from sale of all power generated in excess of that required to operate the plants.~~

6. MANUFACTURE OF NITRATES.—When the two nitrate plants, now a part of the property, which plants have an estimated capacity of 120,000 tons of ammonium nitrate per annum, have been redesigned and reconstructed as herein provided to manufacture such nitrates as are needed for commercial fertilizers, fertilizer compounds or mixtures as approved by the Secretary of Agriculture, the lessee agrees to operate said plants under the following conditions: As soon as adequate hydro-electric power, generated at dam No. 2 becomes available, lessee will commence to operate both plants and will continue such operation to the capacity they can be operated, after deducting operating expenses, from the receipts of the sale of:

(a) Nitrates and fertilizer compounds,

(b) Seventy-five per cent of all marketable by-products not required for the manufacture of nitrates or fertilizer compounds,

(c) 66 2-3% of all power generated in excess of that required to operate the plants, which is sold by lessee either to itself or to other parties, provided that the price at which power, if any, is sold to lessee is subject to approval by the Secretary of War.

The term "Operating expenses" as used herein shall be understood to include the necessary and legitimate expenses for the proper operation of the entire plant for the purposes

set forth in this agreement, including maintenance, alteration, repairs and replacements but not including the salaries of officers, directors, general manager, supervising engineer and counsel fees of the operating company, the lessee.

When additional dams and nitrate plants shall have been built, they shall be operated by the lessee under the same terms, except that the percentage of receipts from the excess power sold from such dam or dams, which is to be turned into the fund for the operating of such plants or to be paid into the treasury, as the case may be, shall be 75% thereof instead of 66 2-3% of such power from Dam No. 2 (as provided in subparagraph (c) above) and shall be in addition thereto.

7. ALTERATIONS OF NITRATE PLANTS.—It is also agreed that the lessee will make such alterations, additions, or changes in the nitrate plants as may be required to produce the nitrates or other fertilizer compounds approved by the Secretary of Agriculture, and to be completed within the time required to produce hydro-electric power at Dam No. 2. After the plants have been put in operation under this lease the lessee shall make such additions or changes, from time to time, as may be necessary to produce the required fertilizer or fertilizer compounds approved by the Secretary of Agriculture, and such changes ~~and the cost of producing complete fertilizers,~~ are to be made as an operating charge. ~~from the funds on hand derived from the sale of fertilizer compounds, and the power not required to operate the plant.~~

8. PLANS OF ALTERATIONS.—It is agreed that the lessee will furnish the Secretary of War copies of the plans and specifications of the proposed changes to be made in the nitrate plants to fit them to produce the *nitrates and* fertilizer compounds approved by the Secretary of Agriculture. Such alterations are to be so designed as to keep the nitrate plant No. 2 in condition to produce explosive compounds with the least delay and expense.

9. RESEARCH.—The lessee agrees to maintain and operate a research department in cooperation with the Agriculture Department of the Government, for the purpose of developing the processes for the fixation of atmospheric nitrogen, the cost of research work to be charged to operating expenses of the plant.

10. CONSTRUCTION.—Lessee agrees to begin construction within ~~60 days from the~~ *a reasonable* time *after* it is given possession of the property and to continue such construction in a diligent, business, and workmanlike manner until all construction work provided for under this contract shall be completed, according to terms hereinafter set forth, within three years from the time of possession, reasonable extension of time to be granted for delays over which the lessee has no control.

11. CHANGES.—It is further agreed that at any time during the construction, if, in the opinion of either party herein, the structures provided for in the plans have become, or are liable to become weak, dangerous, uncertain, or inefficient, they may request changes, extensions, or additions to be made in the plans for the purpose of increasing the strength, stability, duty, endurance, or efficiency of the dams, locks, power stations, or other structures to be built by lessee under provisions of this contract, such changes, extensions, or additions shall be submitted to the engineer representing the other party and to the surety company furnishing the bond of the lessee, and if such changes, extensions, or additions shall be approved by the engineer representing the other party and the surety company they are to become a part of this contract and become as binding on both parties, and the bonds of the lessee, as if originally written herein.

12. ARBITRATION.—It is also provided that, in event a request of either party for changes, extensions, or additions in the plans for any of the purposes set forth in the foregoing paragraph of this contract has been approved by the surety on the bond of the lessee, and has not been approved by the engineer representing the other party, then the questions of endurance or strength of such material or members as can be determined by physical test shall be submitted to the United States Bureau of Standards for final determination, and all questions as to the effect of the proposed changes, extensions, or additions upon the increase of strength, stability, duty, endurance, or efficiency of the dams, locks, power stations, or other structures to be built under this agreement, the plans for the changes as requested shall be submitted to the engineering faculty, or such members thereof who will undertake the work, of one or both of the following-named universities or schools of technology: Massachusetts Institute of Technology, Cambridge, Mass.; Cornell University, Ithaca, N. Y.; and the report of such faculty or faculties, if submitted to more than one, together with the report of the Bureau of Standards, shall be final, and if such report of the Bureau of Standards and faculties of technical schools, mentioned herein, show that the proposed changes, extensions, or additions, will materially increase the strength, stability, duty, endurance, or efficiency of the structures affected by the changes, extensions, or additions, then such changes, extensions, or additions shall become a part of the working plans of this contract, the same as if they were originally written herein, or had been approved by the engineers of both parties and the surety bond.

13. COSTS OF TESTS.—It is also understood and agreed that the cost of testing, consulting, or other expenses caused by the request for changes in the plans, as provided for, shall be a part of the construction cost provided herein.

14. REPRESENTATIVES.—It is understood and agreed that during the time of construction that both parties hereto shall designate an engineer to represent them on the work and the acts of such engineer shall be binding as to the party designating him as a representative.

15. INVESTMENT.—It is agreed that the lessee will not be required to invest in the manufacture of nitrates or other fertilizer compounds any money, other than that received from the ~~sale of the products of the nitrate plants plus 1 mill per kilowatt hour received from the sale of power in excess of that required to operate the plant~~ *sources enumerated in paragraph 6. The lessee agrees, however, to advance all the money that may be necessary for "operating expenses" until sufficient funds are received from the sources enumerated in paragraph 6; the said money so advanced to be reimbursed as soon as practicable.*

16. SALE OF PRODUCTS.—It is further agreed that the lessee will sell all ~~fertilizer~~ *nitrates* and fertilizer compounds produced by the plant at prices and on conditions and terms approved by the Secretary of Agriculture, *and also will sell all by-products not required in the manufacture of fertilizer compounds, for which there is a market, and all excess power for which there is a market; it being understood and agreed that primary power may be sold and the nitrate plants may be operated by secondary power to the extent that the same can be done to assure the best financial returns for the operation of the plant and to produce a maximum of nitrates and fertilizers under this contract.*

17. ADDITIONAL PLANTS.—It is further agreed that in event the development of power for use and sale from this plant, together with the receipts from the sale of products, should be insufficient to produce the amount of fertilizer compounds required to supply the demands, the lessee agrees to construct, under the terms of this agreement, other power plants or storage reservoirs, upon sites owned by the Government and selected by the Secretary of War and itself, said plants or storage reservoirs to be constructed and operated under the general terms of this agreement for the purpose of enabling it to provide the fertilizer compounds to meet growing needs.

~~18. PROFITS FROM NITRATES. It is also further agreed that when nitrates can be made at a profit or when the cost of the same has been so reduced that the funds arising from the sale of excess power and fertilizer compounds are not needed in whole or in part for financing such productions as herein provided, the said funds shall be paid by the lessee into the Treasury of the United States.~~

18. PROFITS FROM NITRATES.—It is further agreed that when nitrates for fertilizers and fertilizer compounds can be made at a profit, or when the cost of the same has been so reduced that the funds arising from the sources enumerated in paragraph 6 are not needed in whole, or in part, for financing such productions as herein stated, the said funds, not needed for operating expenses, shall be paid by the lessee into the Treasury of the United States. When said funds paid into the Treasury shall be in excess of the amount received from sale of excess power as described in pragraph 6, it is understood and agreed that during the period such conditions exist, fertilizers are made at a corresponding profit and the lessee shall be entitled to twenty-five per cent of such profit.

19. CONSIDERATION.—In consideration of the performance of the foregoing proposals and conditions the Government shall agree to pay to the lessee ~~the cost plus 5 per cent of~~ *for* the completion of Dam No. 2, the initial alterations of nitrate plants No. 1 and No. 2, ~~and~~ the completion of the locks at Dam No. 2, *the completion of steam plant No. 1 to a capacity of 10,000 K. W. and steam plant No. 2 to a capacity of 90,000 K. W.* and, when required by the Government, ~~to build~~ *for the building of* Dam No. 3 *and nitrate plant No. 3* and the locks at Dam No. 3 and additional *dams and nitrate* plants and storage reservoirs, *the actual cost of the same, respectively, together with a fee of five per cent on such cost in each case,* ~~on the same terms,~~ in monthly payments, as per estimates of the engineers upon schedules of work performed. The cost in each case is to be determined by the lowest responsible bid resulting from a public offer by lessee and by the contract awarded by lessee to such bidder subject to approval by the Secretary of War. *It is understood and agreed, however, that if the Government shall decide to finish dam No. 2, that lessee will accept a lease subject to that modification of this proposal.*

20. PAYMENTS.—It is agreed ~~herein~~ that the engineers representing the Government *and lessee* ~~will~~ *shall* on the first of each month furnish the lessee *and the Secretary of War* an estimate of the work performed and a statement of the amount earned by ~~it~~ *lessee* during the preceding month.

21. STORES, STOCK, AND EQUIPMENT.—All stores, supplies, equipment, including engineers' supplies, files and instruments, and other loose personal property now on or about the premises, whether or not required for construction purposes, but not

including subsistence stores, shall become the property of the lessee upon the execution of this contract.

~~22. Compensation. It is further agreed that as a part of the consideration for the performance of this contract the lessee will retain the proceeds from the sale of power not required to operate the plant or plants, and locks or lifts, over and above the 1 mill per kilowatt hour required for financing the production of fertilizer compounds, or to be paid into the United States Treasury as set forth in this agreement.~~

22. Compensation.—It is further agreed that as compensation for the performance of this contract the lessee shall retain:

(a) The proceeds from the sale of 33 1-3% of excess power from Dam No. 2 not required to operate the plant or plants, and locks or lifts; the other 66 2-3% to be contributed for operating expenses as provided in paragraph 6; and, when Dam No. 3 is built, the proceeds from the sale of 25% of excess power from Dam No. 3 not required to operate nitrate plant No. 3 and locks or lifts at Dam No. 3, the other 75% to be contributed toward the operating expenses as provided in paragraph 6; the same percentage last above named, to apply to all other dams and nitrate plants that may be built hereunder.

(b) The proceeds from the sale of twenty-five per cent of all by-products for which there shall be a market and not required in the manufacture of fertilizer compounds or mixtures; the other seventy-five per cent to be contributed toward operating expenses as provided in paragraph 6.

(c) Twenty-five per cent of the profits on the manufacture of fertilizer compounds if and when the same shall be made at a profit as provided for in paragraph 18; the other seventy-five per cent to be contributed toward operating expenses as provided in paragraph 6.

23. Power for Locks.—The lessee agrees to furnish to the Government, free of charge, all power required to operate the locks or lifts which are to be operated by the Government.

24. Emergency Provision.—The lessee agrees to place the property or any part thereof, at the disposal of the Government in the event of war or any other public emergency, or to operate the same for the Government to manufacture nitrates, explosives, or munitions of war or for other purposes necessary for the safety of the United States, as the Government may require.

25. Bond.—The lessee agrees to protect the Government for the full and faithful performances of the contract by giving a good and sufficient surety bond, to be approved by the Government.

26. Inspection.—It is agreed that the Government experts, inspectors, and accountants can, at all reasonable times, examine the books, papers, accounts, meters, and such other accessories of the plant necessary to satisfy them whether or not the lessee is executing this contract in good faith.

27. Repairs.—It is also agreed that should the foundation of Dam No. 2 be found defective or show excessive leakage, the Government will pay to the lessee the expense of the necessary repairs, including a reasonable allowance for overhead.

28. Proposal Divisible.—The above proposals are submitted for acceptance in whole or in part as provided in section 19 hereof. Upon acceptance it shall be binding upon the Government, and the lessee, its successors and assigns; and all contracts, leases, and other instruments necessary or appropriate to effectuate the purpose of this proposal as accepted shall be duly executed and delivered by the respective parties above mentioned.

In witness whereof, the United States of America has caused these presents to be executed by the Secretary of War, pursuant to the authority conferred upon him by act of Congress, approved the —— day of ——, 1922, entitled "An act to provide for the lease and completion of Muscle Shoals and other purposes," and the said Frederick E. Engstrum has set his hand on the day and year first herein above set forth.

United States of America,
By ——— ———, *Secretary of War.*
Frederick E. Engstrum.

Washington, D. C., *April 17, 1922.*

Hon. Julius Kahn,
Chairman House Committee on Military Affairs.

My Dear Mr. Chairman: I beg to submit herewith an amended form of proposed contract for completion and lease of Muscle Shoals project by Frederick E. Engstrum. The parts to be omitted are struck through and the parts inserted are in italic.

This amended proposal is submitted partly to clear up points that were brought out by questions of members of the committee during the hearing before the House committee and partly as the result of a personal inspection made by Mr. Engstrum of the various properties pertaining to the Muscle Shoals project.

It is believed that the amended proposal will clear up many points about which there seemed to be doubt in the minds of members of the committee, and also, it is believed, that the changes made will all result in advantages to the Government.

The material amendments are as follows:

Paragraph 2: The Warrior steam plant is eliminated. The inspection of the property indicates that this plant is so intimately interwoven with the Alabama Power Co. plant that it really forms an integral part of that plant and probably can not be separated therefrom without seriously interfering with its efficient operation.

Paragraph 4: Capacity of nitrate plants No. 1 and No. 2 is increased by 5,000 kilowatts and 30,000 kilowatts, respectively. Such increase becomes necessary to replace power lost by eliminating the Warrior plant, the sales value of which is reported by the Ordnance Department to be $3,000,000. Plants No. 1 and No. 2 can be modified as proposed, it is estimated, for less than $1,500,000, thus saving the Government about $1,500,000. This low estimate is due to the fact that steam plant No. 2 has boiler installation now for 90,000 kilowatts and electrical installation for only 60,000 kilowatts, but the foundations are prepared for the installation of 90,000 additional kilowatts electrical power.

Paragraph 4 also provides for construction of nitrate plants at other dams and reservoirs that may be constructed in the future; such new plants to have same capacity ratio to power produced at such dams as is the ratio of plants No. 1 and No. 2 to Dam No. 2.

Paragraph 6: This paragraph is rewritten and materially modified. As rewritten it enumerates clearly and definitely the sources of revenue that are to be applied by the lessee to the manufacture of nitrates, etc., at nitrate plants No. 1 and No. 2. It defines what is understood by the term "operating expenses" and lays down definitely the policy under which nitrate plants are to be operated, if and when additional dams and nitrate plants shall have been constructed. It is perhaps pertinent to call attention to the fact that under paragraph 6 when additional dams and nitrate plants are constructed the lessee's share of the receipts from the sale of excess power, generated at such dams, will be reduced from 33⅓ per cent to 25 per cent. This, it is believed, is practicable, due to the fact that lessee's overhead and general expenses for the operation of such additional plants will not increase in the same proportion, and, consequently this reduction in his receipts is made.

Paragraph 15: The addition to this paragraph is a specific statement that the lessee agrees to advance the necessary funds for operating expenses until the funds enumerated in paragraph 6 shall become adequate for that purpose.

Paragraph 16: The material addition to this paragraph provides that secondary power may be used to operate the nitrate plants when this can be done to insure the best financial terms so as to produce the maximum amount of nitrates.

Paragraph 18: This paragraph provides for the disposition of funds received from various sources enumerated in paragraph 6, when they are not wholly needed for the production of fertilizers, etc. It also defines when it is agreed that a profit is made on the manufacture of fertilizers at the price fixed by the Secretary of Agriculture, and that when such profit is made that the lessee shall be entitled to 25 per cent of said profit. This furnishes a motive for lessee to improve to the utmost the processes of manufacture and reduce to the minimum the operating expenses.

Paragraph 19: The material change in this paragraph provides that in case the Government should so elect it may itself finish dam No. 2 by its own engineers, and lessee will accept the lease subject to that modification.

Paragraph 22: This paragraph is entirely rewritten as a result of the modifications made in paragraph 6. This paragraph provides that the lessee shall retain 33⅓ per cent of the proceeds received from the sale of all power not required to operate the nitrate plant or plants and locks or lifts generated at dam No. 2 and steam plants No. 1 and No. 2, but that in case additional dams be constructed lessee will retain only 25 per cent of the proceeds of corresponding sales at such dams. This paragraph also provides that lessee shall retain 25 per cent of profits of the sale of all by-products, and finally in case a profit should be made on fertilizers, under the provisions laid down in paragraph 6, he shall be entitled to 25 per cent of such profits. It should be remarked that this paragraph is complementary to paragraph 6, and should be interpreted accordingly.

Paragraph 28: This is a new paragraph and is self-explanatory.

A careful reading of this amended proposal is requested, because one of the main objects in making the amendments, aside from clearness and definiteness, has been to make the interests of the lessee parallel with the interests of the Government, so that he shall have the proper motives for the utmost economy in operation and the

greatest efforts in improving the processes for fixation of nitrogen and for the production of fertilizer compounds. It has also been attempted, to clarify the policy contained in this proposal, to devote all available sources of revenue to the production of fertilizers at reduced prices in time of peace and to have the plants in condition to produce nitrates for explosives, with the least possible delay, in time of war or other emergencies; and this proposal makes this policy applicable to the whole project, however far it may be extended in future. In so far as lessee is informed, this proposal is the only one submitted which guarantees with definite provisions that such policy shall prevail.

Respectfully submitted.

FREDERICK E. ENGSTRUM.

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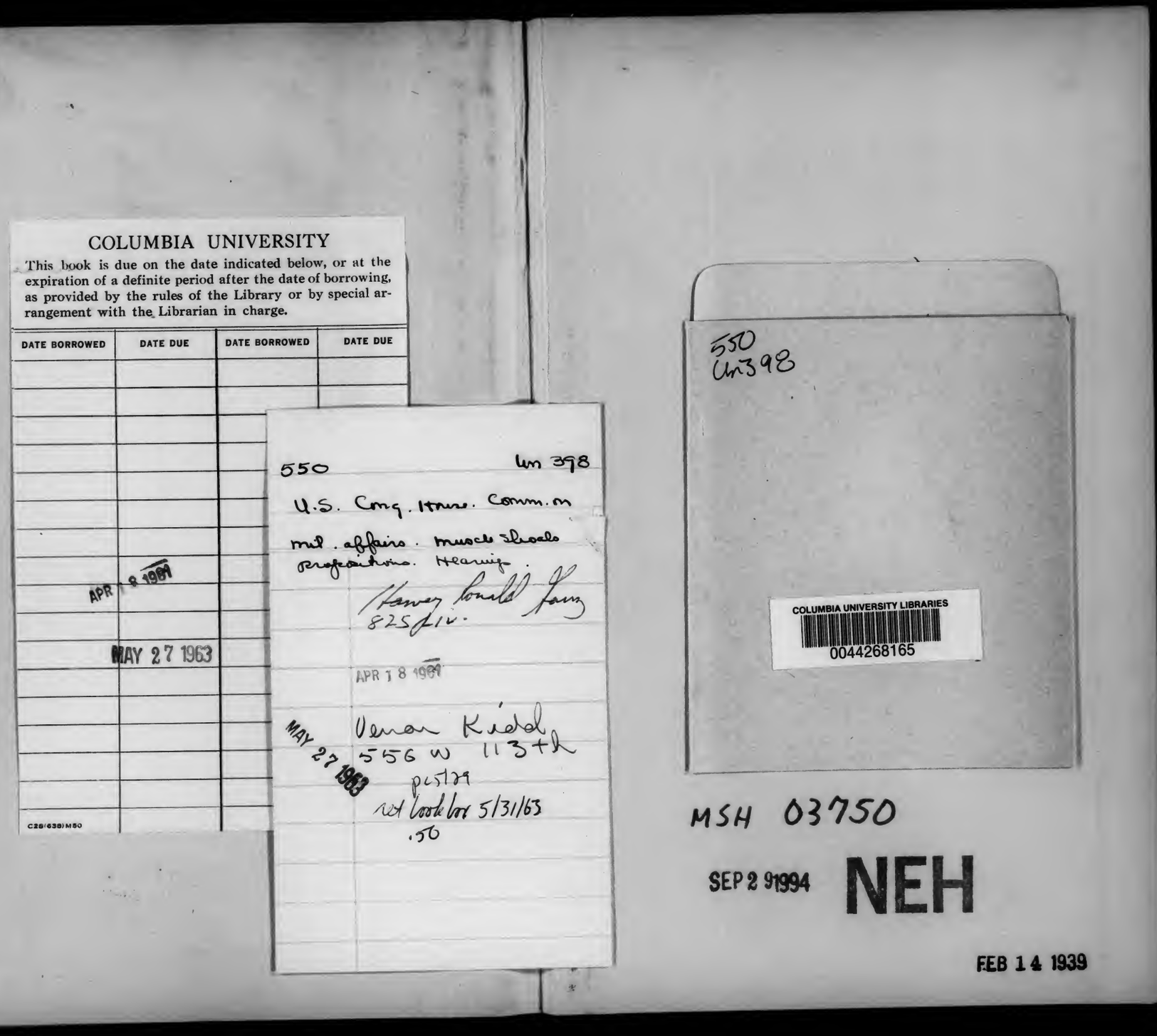

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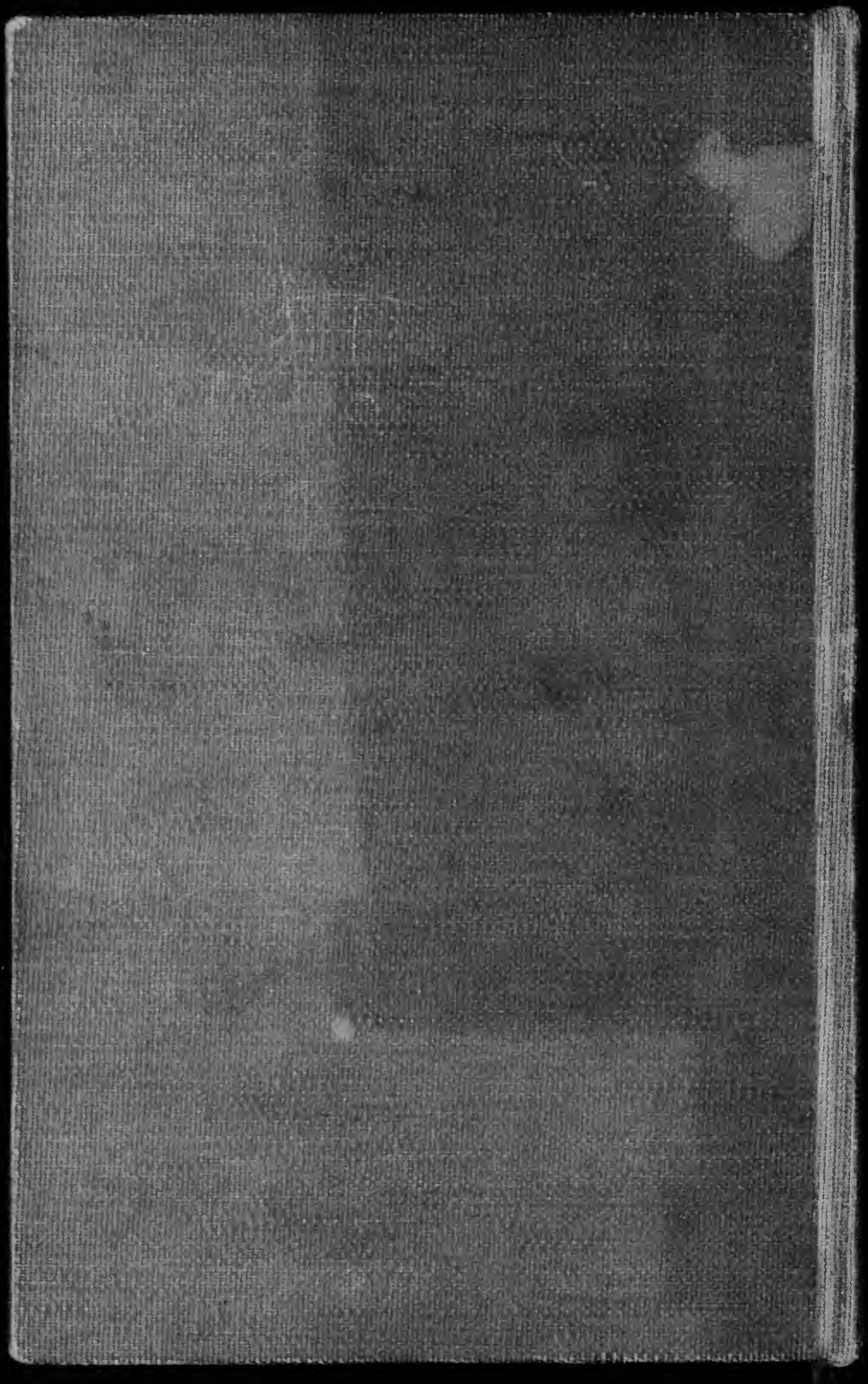

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